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TRANSCRIPT OF RECORD.

SUPREME COURT OF THE UNITED STATES.

OCTOBER TERM, 1886.

No. 181.

THE ALBANY AND RENSSELAER IRON AND STEEL COMPANY, PLAINTIFF IN ERROR,

vs.

GUSTAF LUNDBERG.

IN ERROR TO THE CIRCUIT COURT OF THE UNITED STATES FOR THE SOUTHERN DISTRICT OF NEW YORK.

FILED OCTOBER 19, 1883.

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1 UNITED STATES OF AMERICA, *ss:*

The President of the United States to the honorable the judges of the circuit court of the United States for the southern district of New York, Greeting:

Because in the record and proceedings as also in the rendition of the judgment of a plea which is in the said circuit court before you, between Gustaf Lundberg, plaintiff, and The Albany and Rensselaer Iron and Steel Company, defendant, a manifest error hath happened, to the great damage of the said The Albany and Rensselaer Iron and Steel Company, as by its complaint appears, we, being willing that error, if any hath been, should be duly corrected and full and speedy justice done to the parties aforesaid in this behalf, do command you, if judgment be therein given, that then, under your seal, distinctly and openly, you send the record and proceedings aforesaid, with all things concerning the same, to the Supreme Court of the United States, together with this writ, so that you have the same at Washington on the second Monday of October next, in the said Supreme Court to be then and there held, that, the record and proceedings aforesaid being inspected, the said Supreme Court may cause further to be done therein to correct
2 that error what of right and according to the laws and customs of the United States should be done.

Witness Honorable Morrison R. Waite, Chief Justice of the said Supreme Court, this 1st day of September, in the year of our Lord one thousand eight hundred and eighty-three.

[Seal of U. S. Circuit Court, South. Dist. New York.]

TIMOTHY GRIFFITH,
Clerk of the Circuit Court of the United States for the Southern District of New York.

Allowed by—
ALFRED C. COXE.

[Endorsed:] E. & A. A., p. 423. Supreme Court of the United States. Gustaf Lundberg against The Albany and Rensselaer Iron and Steel Company. Writ of error. [Stamped:] U. S. circuit court. Filed Sep. 1, 1883. Timothy Griffith, clerk.

UNITED STATES OF AMERICA, }
Southern District of New York, } *ss:*

I, Timothy Griffith, clerk of the circuit court of the United
3 States of America for the southern district of New York, in the second circuit, by virtue of the foregoing writ of error and in obedience thereto, do hereby certify that the following pages, numbered from five to three hundred and seventy, inclusive, contain a true and complete transcript of the records and proceedings had in said court in the case of The Albany and Rensselaer Iron and Steel Company, plaintiff in error, against Gustaf Lundberg, defendant in error, as the same remain of record and on file in said office.

In testimony whereof I have caused the seal of the said court to

be hereunto affixed, at the city of New York, in the southern district of New York, in the second circuit, this third day of October, in the year of our Lord one thousand eight hundred and
4 eighty-three and of the Independence of the United States the one hundred and eighth.

[Seal of U. S. Circuit Court, South. Dist. New York.]

TIMOTHY GRIFFITH, *Clerk.*

5 Circuit Court of the United States for the Southern District of New York.

GUSTAF LUNDBERG
ag'st
THE ALBANY AND RENSSELAER IRON AND STEEL COMPANY.

The clerk of this court will please issue a summons in the above-entitled action.

(S'g'd) McDANIEL & SOUTHER,
Plaintiff's Attorneys.

(Endorsed:) Circuit court of the United States for the southern district of New York. Gustaf Lundberg ag'st The Albany
6 and Rensselaer Iron and Steel Company. *Pracipe.* Filed Nov. 30, 1881.

7 United States Circuit Court for the Southern District of New York.

GUSTAF LUNDBERG
against
THE ALBANY AND RENSSELAER IRON AND STEEL COMPANY.

To the above-named defendant:

You are hereby summoned to answer the complaint in this action, and to serve a copy of your answer on the plaintiff's attorney within twenty days after the service of this summons, exclusive of the day of service, and in case of your failure to appear or answer judgment will be taken against you by default for the relief demanded in the complaint.

Witness the Honorable Morrison R. Waite, Chief Justice of the Supreme Court of the United States, at the city of New York,
8 this 30th day of November, in the year one thousand eight hundred and eighty-one.

[Seal U. S. C. C., S. D. of N. Y.]

(S'g'd) JOSEPH M. DEUEL, *Clerk.*

McDANIEL & SOUTHER,
Plaintiff's Attorneys.

Office and post-office address, Nos. 8 & 10 Pine St., New York.

(Endorsed:) I hereby certify that on the 1st day of December, 1881, at the city of New York, in my district, I served the within summons upon the within-named The Albany and Rensselaer Iron

and Steel Company by exhibiting to Chester Griswold, vice-president of said company, the within original, and at the same time leaving with him a copy thereof.

Dated December 12th, 1881.

F. B. (S'g'd) HENRY E. KNOX,

9 *U. S. Marshal, S. D. N. Y.*

United States circuit court, southern district of New York. Gustaf Lundberg *vs.* The Albany and Rensselaer Iron and Steel Company. Summons. McDaniel & Souther, plaintiff's attorneys. U. S. circuit court. Filed Dec. 12, 1881. Joseph M. Deuel, clerk.

10 Circuit Court of the United States for the Southern District of New York.

GUSTAF LUNDBERG
against
THE ALBANY AND RENSSELAER IRON AND STEEL COMPANY.

The plaintiff above named, by McDaniel & Souther, his attorneys, complains of the defendant above named, and respectfully states to the court, upon his information and belief, as follows:

First. For a first cause of action:

1. The plaintiff is not a citizen of the United States, but is an alien and subject of the kingdom of Sweden and Norway, and resides at Boston, in the State of Massachusetts.

11 2. The defendant is a corporation duly created and existing under the laws of the State of New York, and is a citizen thereof and of the United States, and has an office for the transaction of business in the southern district aforesaid, to wit, in the city of New York.

3. On the 10th day of February, 1880, the plaintiff, by an instrument in writing, duly signed by him and by the defendant, agreed to sell to the defendant, and the defendant agreed to purchase from the plaintiff, certain goods, wares, and merchandise described in said contract, which, at the prices then and there agreed upon by and between the parties, amounted, in the aggregate, to the sum of twenty-three thousand nine hundred and twenty-two $\frac{34}{100}$ dollars ($23,922.34), and which amount the defendant then and there agreed to pay, according to the terms of said contract, all of which

12 will, by reference to the said agreement, a copy of which, marked "A," is hereto annexed and made part of this complaint, more fully and at large appear.

4. Thereafter and on the 9th day of June, 1880, the plaintiff delivered to the defendant, in fulfillment of the contract aforesaid, marked "A," four hundred and ninety-eight tons seven hundredweight two quarters and sixteen pounds of Swedish charcoal grey pig iron, of the brand NB G P H, on the wharf in the city of New York, duty paid. The said iron had been shipped from Sweden in May, 1880, which was as early a time of shipment as the plaintiff was able to ship that amount and quality and brand of iron. The defendant received the same without objection, on the ground that

the amount thereof was slightly less than the amount of five hundred tons mentioned in said contract, and caused the same to
13 be transported to Troy, in New York, and examined the same there, and then and there refused to accept or pay for the same, on the ground that the same was not of the quality and description called for by said contract. Upon the said delivery of said goods plaintiff duly rendered his bill for the same and demanded that the defendant should pay for the same thirty days after the delivery aforesaid, which bill the defendant refused to pay. The interest on the amount of said contract paid from July 9, 1880, to August 24, 1881, amounts to the sum of one thousand six hundred and fourteen $\frac{79}{100}$ dollars ($1,614.79).

5. The plaintiff, upon such refusal, duly notified the defendant that he would proceed to sell the said iron on account of the defendant, and would hold the defendant responsible for any loss
14 arising upon the said resale. After the said refusal and notice, and at various times during the year 1881 and down to and including August 24, 1881, the plaintiff, in good faith and with due diligence, sold the said goods for the account of the defendant for the best price that could then and there be obtained, to wit, the sum of sixteen thousand five hundred and eighty-one $\frac{71}{100}$ dollars ($16,581.71), amounting, together with interest on sales from dates thereof to August 24, 1881, to the sum of sixteen thousand six hundred and seven $\frac{58}{100}$ [dollars] ($16,607.58), leaving a balance due to the plaintiff from the defendant of eight thousand, nine hundred and thirty $\frac{15}{100}$ dollars ($8,930.15), no part of which has been paid to the plaintiff.

6. The plaintiff paid, laid out, and expended for the defendant on such resale as and for the necessary and reasonable expenses
15 upon the same the sum of one thousand eight hundred and seventy-four $\frac{9}{100}$ dollars ($1,874.09), as will more fully appear from the account thereof, annexed hereto and marked "C," by reason whereof the defendant became justly indebted unto the plaintiff in said sum in addition to the balance aforesaid, amounting together to the sum of ten thousand eight hundred and four $\frac{24}{100}$ dollars ($10,804.24), no part of which has been paid to the plaintiff.

Second. The plaintiff further shows to this court for a second separate cause of action as follows:

1. The plaintiff is not a citizen of the United States, but is an alien and subject of the Kingdom of Sweden and Norway, and resides at Boston, in the State of Massachusetts.

16 2. The defendant is a corporation duly created and existing under the laws of the State of New York, and is a citizen thereof and of the United States, and has an office for the transaction of business in the southern district aforesaid, to wit, in the city of New York.

3. On the 11th day of February, 1880, the plaintiff, by an instrument in writing duly signed by him and by the defendant, agreed to sell to the defendant, and the defendant agreed to purchase of the plaintiff, certain other goods, wares, and merchandize described in said contract, which, at the prices then and there agreed upon by

and between the parties, amounted in the aggregate to the sum of fifteen thousand nine hundred and twenty-eight $\frac{46}{100}$ dollars ($15,928.46), and which amount the defendant then and there agreed to pay to the plaintiff according to the terms of said contract; all of which will, by reference to said agreement, a
17 copy of which, marked "B," is hereto annexed and made part of this complaint, more fully and at large appear.

4. Thereafter, on or about the 9th day of June, 1880, the plaintiff delivered to the defendant, in fulfillment of the aforesaid contract marked "B," 331 tons 16 hundred-weight 3 quarters and 12 pounds of Swedish charcoal grey pig-iron of the brand S B Y E and S B V E and NB B K on the wharf, in the city of New York, duty paid.

Said iron was in accordance with the analysis furnished the defendant by the plaintiff on or about the 6th day of February, 1880, as specified in said contract. Said iron had been shipped from Sweden in May, 1880, which was as early a time of shipment as the plaintiff was able to ship that amount and quality and brand
18 of iron. The same was received by the defendant and transported to Troy without objection on the ground that the amount so delivered was more than the contract called for, and was examined by defendant in Troy aforesaid, and it thereupon refused to accept or pay for the same on the ground, alleged by it, that the the same was not in accordance with said analysis.

Upon the said delivery of said goods the plaintiff duly rendered his bill for the same, and demanded that the defendant should pay for the same thirty days after the delivery aforesaid, which bill the defendant refused to pay.

The defendant, however, used of the said iron part thereof, to wit, nineteen tons seven hundred-weight and fifteen pounds, for which it paid the plaintiff the agreed price, to wit, nine hundred and twenty-nine $\frac{12}{100}$ dollars ($929.12.)

19 5. The plaintiff, upon such refusal, duly notified the defendant that he would proceed to sell the said iron on account of the defendant, and would hold the defendant responsible for any loss arising upon the said resale. After the said refusal and notice, and at various times during the year 1881, and down to and including October 3, 1881, the plaintiff in good faith and with due diligence sold the said goods for the account of the defendant for the best price that could then and there be obtained, which, together with the amount so as aforesaid retained and used by the defendant, amounted to the sum of eleven thousand two hundred and nine $\frac{19}{100}$ dollars ($11,209.19), which, with interest on sales from the dates thereof to October 3, 1881, amounted in all to the sum of
20 eleven thousand two hundred and twenty-six $\frac{56}{100}$ dollars ($11,226.56), leaving a balance due to the plaintiff from the defandant of five thousand eight hundred and eighty $\frac{60}{100}$ dollars ($5,880.60), no part of which has been paid to the plaintiff.

6. The plaintiff paid, laid out, and expended for the defendant on such resale, as and for the necessary and reasonable expenses upon the same, the sum of eight hundred and eighty-five $\frac{19}{100}$ dol-

lars ($885.19), as will more fully appear from the account thereof, annexed hereto and marked "D," by reason whereof the defendant became justly indebted unto the plaintiff in said sum in addition to the balance last aforesaid, amounting in all to the sum of six thousand seven hundred and sixty-five $\frac{19}{100}$ ($6,765.19), no part of which has been paid to the plaintiff.

21 Third. The plaintiff further shows for a third cause of action as follows:

The plaintiff, to avoid unnecessary repetition, refers to and restates the allegations of the first and second causes of action hereinbefore alleged, and makes them part of his statement of the third cause of action.

After the plaintiff had demanded and been refused payment for the iron delivered to the defendant, as in the statement of said first and second causes of action is averred, and after the plaintiff had given notice to the defendant that he would proceed to sell the same for the account of the defendant, the defendant refused to give up the said iron, except on the payment by the plaintiff of six hundred and twenty-two $\frac{67}{100}$ dollars ($622.67), the amount of the

22 freight from New York to Troy, paid by the defendant, and which amount defendant demanded from plaintiff, although by the terms of the contract defendant was bound to pay said freight. Plaintiff thereupon, in order to obtain the said iron and make delivery thereof to the several purchasers upon such resale, was compelled to and did on or about the 6th day of August, 1881, pay to the defendant the amount so demanded, which amount still remains due and owing from said defendant to said plaintiff; but the defendant, although thereto requested, has not paid the same nor any part thereof.

Fourth. And the plaintiff further shows for a fourth separate cause of action as follows:

23 The plaintiff, to avoid unnecessary repetition, refers to and restates the allegations of the first and second causes of action hereinbefore alleged, and makes them part of this statement of the fourth cause of action.

The plaintiff did and performed for the defendant certain work, labor, and services in and about the sale of said iron for defendant's account, averred in said several statements of the first and second causes of action, which were reasonably worth, at the ordinary and usual rates for such services, the sum of six hundred and sixty-nine $\frac{7}{100}$ dollars ($669.07).

Said sum is long since due and payable from the defendant to the plaintiff, but the defendant, although thereto requested, has not paid the same nor any part thereof.

Wherefore the plaintiff demands judgment against the defendant for the sum of ten thousand eight hundred and four $\frac{24}{100}$ dol-

24 lars ($10,804.24), with interest thereon from the 24th of August, 1881, and for the further sum of eight thousand and

fifty-six $\frac{93}{100}$ dollars ($8,056.93), with interest thereon from the 3rd day of October, 1881, besides the costs of this action.

McDANIEL & SOUTHER,
Attorneys for Complainant.

Office and post-office address Nos. 8 & 10, Pine street, N. Y. city.

SOUTHERN DISTRICT OF NEW YORK, } ss.:
City and County of New York, }

William V. McDaniel, being duly sworn, says that he is one of the attorneys of the plaintiff in the above-entitled action, and that the foregoing complaint is true to his own knowledge, except as to those matters therein stated to be alleged on information and belief, and as to those matters he believes it to be true.

25 Deponent further says that the reason why this verification is not made by said plaintiff is that he is not within said city and county where deponent has his place of business, nor within the county where deponent resides, and that the source of deponent's knowledge and the grounds of his belief of the allegations of said complaint are derived from the possession by said attorneys of the plaintiff of copies of the written instruments referred to therein and the inspection thereof by deponent, and also from information derived from said plaintiff and from letters from the defendant respecting the same.

(S'g'd) W. V. McDANIEL.

Sworn to this 30th day of November, 1881, before me—
[NOTARIAL SEAL.] (S'g'd) HAROLD G. CURTIS,
Notary Public, Kings County.

Cert. filed in New York county.

26 A.

Copy of Contract.

I, Gustaf Lundberg, agent for N. M. Höglund's Sons & Co., of Stockholm, agree to sell, and we, Albany & Rensselaer Iron & Steel Co., Troy, N. Y., agree to buy, the following Swedish charcoal grey pig-iron, viz: 500 tons of brand NB G P H, at a price forty-eight ($48) dollars, American gold, per ton of 2,240 lbs., delivered on wharf, New York, duty paid; payment in gold, in Boston of New York funds, within 30 days from date of ship's entry at custom-house; shipment from Sweden, say May next, or sooner if possible.

The above quantity hereby contracted for to be subject to such reduction as may be necessitated by natural obstacles and unavoidable accidents.

The seller not accountable for accidents or delays at sea.

Signed in duplicate.

27 BOSTON, *Feb'y 10th*, 1880.

Accepted.

GUSTAF LUNDBERG.

Accepted.

ALBANY & RENSSELAER IRON & STEEL CO.,
SELDEN E. MARVIN, *Treas'r.*

28 B.

Copy of Contract.

I, Gustaf Lundberg, agent for N. M. Höglund's Sons & Co., of Stockholm, agree to sell, and we, Albany & Rensselaer Iron & Steel Co., Troy, N. Y., agree to buy, the following Swedish charcoal grey pig-iron, viz: 300 tons of brand S B V [illegible] & NB [B] B K, at a price forty-eight ($48) dollars, American gold, per ton of 2,240 lbs., delivered on wharf, New York, duty paid; "said iron to be in accordance with the analysis as furnished the Albany & Renss. Iron & Steel Co. in Mr. Lundberg's letter of 6th Febr'y, '80;" payment in gold in Boston or New York funds, within 30 days from date of ship's entry at custom-house; shipment from Sweden, say May next, or earlier if possible.

The above quantity hereby contracted for to be subject to such reduction as may be necessitated by natural obstacles and
29 unavoidable accidents.

The seller not accountable for accidents or delays at sea.

Signed in duplicate.

BOSTON, *February 11th*, 1880.

Accepted.

GUSTAF LUNDBERG.

Accepted.

THE ALBANY & RENSSELAER IRON & STEEL CO.,
SELDEN E. MARVIN, *Treas'r.*

30 "C."

Account of Expenses on Pig-Iron Sold for Ac. of the Albany & Rensselaer Iron and Steel Company, Included in Contract Marked A.

1881.					
March	21.	To cash, labor, & freight on lot to Park Bros. & Co.			23 60
"	26.	"	cash, labor, & freight on lot to Lobdell & Co.		21 40
"	"	"	brokerage " " " " "		1 16
May	16.	"	cash, labor, & freight on lot to Balt. Car Wheel Co.		44 35
July	25.	"	cash, freight on A. Whitney & Sons' lot		3 50
"	"	"	brokerage " " " "		0 27
Aug.	4.	"	freight on Singer, Winnick & Co.- "		336
"	"	"	interest allowed		16 50
"	6.	"	freight on Carr & Crawley's lot		13 99
"	24.	"	" " Hussey, Howe & Co.		1,263 82
		"	labor " " " " & S. Winnick & Co.'s lot		50 11
		"	cable messages		99 39
					$1,874 09

31 "D."

Account of Expenses on Pig-Iron Sold for Ac. the Albany & Rensselaer Iron & Steel Company, Included in Contract Marked B.

1881.					
March	26.	To cash, labor, & freight on lot to Lobdell & Co.		32	10
"	"	"	"	brokerage " " " " " "	1	74
July	25.	"	"	freight on A. Whitney & Sons' lot	7	00
"	"	"	"	brokerage " " " "		54
Aug.	6.	"	"	freight, &c., on Carr & Crawley's lot	20	95
Aug.	24.	"	"	" " " Hussey, Howe & Co.'s lot	10	43
Oct.	3.	"	"	" " " Lobdell Car Wheel Co.'s lot	513	36
"	"	"	"	interest allowed on Lobdell Car Wheel Co.'s lot	9	75
"	"	"	"	labor on Lobdell Car Wheel Co.'s lot	95	84
"	"	"	"	insurance on Lobdell Car Wheel Co.'s lot	57	50
"	"	"	"	brokerage on Lobdell Car Wheel Co.'s lot	76	35
"	"	"	"	cable messages to date	59	63
					885	19

32 (Endorsed:) U. S. circuit court, southern dist. of N. Y. Gustaf Lundberg against The Albany & Rensselaer Iron and Steel Company. Complaint. McDaniel & Souther, att'ys for plaintiff, 8 & 10 Pine street, New York. To the defendant, Chester Griswold, Esq., vice-president, 56 Broadway, N. Y. city. (U. S. circuit court. Filed Dec. 12, 1881. Joseph M. Deuel, clerk.)

(Further endorsed:)

I hereby certify that on the 1st day of December, 1881, at the city of New York, in my district, I served the within complaint upon the within-named The Albany and Rensselaer Iron and Steel Company by exhibiting to Chester Griswold, vice-president of said company, the within original, and at the same time leaving with him a copy thereof.

Dated December 12th, 1881.

(S'g'd) HENRY E. KNOX,
U. S. Marshal, S. D. N. Y.

33 U. S. Circuit Court, Southern District of New York.

GUSTAF LUNDBERG
against
THE ALBANY & RENSSELAER IRON & STEEL COMPANY.

SIR: Please enter our appearance as attorneys for the defendants in this suit.

Yours, &c., PARKER & COUNTRYMAN,
Attorneys, Corner of State & Lodge Sts.,
Albany, N. Y.

Dated Albany, December 14, 1881.

To Joseph M. Deuel, Esq., clerk of the U. S. circuit court, southern dist. of N. Y.

(Endorsed:) U. S. circuit court, southern dist. of N. Y. Gustaf Lundberg ag'st The Albany & Rensselaer Iron & Steel Com-
34 pany. Notice to enter appearance. Parker & Countryman, att'ys for def't. U. S. circuit court. Filed Dec. 15, 1881. Joseph M. Deuel, clerk.

35 *Answer.*

In the Circuit Court of the United States for the Southern District of New York.

GUSTAF LUNDBERG
against
THE ALBANY AND RENSSELAER IRON AND STEEL COMPANY.

The defendant, answering the plaintiff in this action—

First. As an answer to the whole complaint, denies any knowledge or information sufficient to form a belief whether, as alleged, the plaintiff is not a citizen of the United States, or whether he is an alien and subject of the Kingdom of Sweden and Norway. The defendant also denies that it has an office for the transaction of its general business in the southern district of New York, or in the city of New York, and the defendant alleges that its only proper, regular, and general office and place of business is in the city of Troy, in the northern district of New York, where it transacts its
36 business and where it is established and located by law and by the terms of its charter, and where it resides. The defendant therefore objects and insists that this action is improperly commenced in the southern district of New York, and that this court has no rightful cognizance or jurisdiction thereof, and the defendant prays for judgment that the action may be dismissed accordingly.

Second. For another and separate answer and defence to the entire complaint, the defendant denies that on the 10th day of February, 1880, or on the 11th day of February, 1880, or at any other time, it made, signed, or authorized either of the contracts therein alleged, or any contract whatever, with the plaintiff, in his own right or in his own behalf, whereby the plaintiff agreed to sell to the defendant, or the

defendant agreed to purchase of the plaintiff, any goods, wares, merchandise, or iron of any kind or description whatever. And
37 the defendant alleges that the contracts mentioned and referred to in the complaint were in fact signed and made by and between the defendant, of the one part, and the firm or copartnership of N. M. Hoglund's Sons & Company, of Stockholm, in the Kingdom of Sweden, of the other part, the plaintiff acting merely as the agent of said firm of N. M. Hoglund's Sons and Company in negotiating and making said contracts, and not otherwise; that the said firm of N. M. Hoglund's Sons and Company were the real and sole owners of said iron referred to in said contracts and in the complaint at the time of the sale thereof, and are the sole owners of said contracts and of any and all claims and interests founded on or growing out of said contracts, and the plaintiff is not the owner thereof nor the real party in interest as the owner of such claims
38 or otherwise, and he is not the proper party plaintiff to this action, and therefore ought not to have or maintain the same against the defendant.

Third. For another and separate answer and defence to the first count or cause of action alleged in the complaint, the defendant denies that on the 10th day of February, 1880, or at any other time, it made, signed, or authorized the contract therein alleged, a copy whereof is annexed to the complaint, marked "A;" and the defendant alleges that the following clause was in fact contained in and was part and parcel of the said contract as made and entered into by and between the said parties, to wit: "Said iron to be in accordance with an analysis furnished in Gustaf Lundburg's letter of 6th instant." Defendant further alleges that said Gustaf Lundberg, the plaintiff, as agent of the firm or copartnership of N. M.
39 Hoglund's Sons and Company, of Stockholm, in the Kingdom of Sweden, had on the previous 6th day of February, 1880, written and sent a letter to, and which was duly received by, the defendant, proposing and offering for sale to the defendant 500 tons NB G P H Swedish charcoal grey pig-iron, as per analysis herewith, at $18 per ton on wharf, N. Y., duty paid, 30 days;" and the analysis referred to and contained in said letter was as follows: "NB G P H phosph., .03 (three-hundredths of one per centum), sulphur trace; silicon, .90 (90 hundredths of one per centum)." That the plaintiff, as such agent as aforesaid, in and by the said contract, agreed to sell, and the defendant agreed to buy, iron, as mentioned in said contract, and of the quality described in said analysis, and not other or different, and the plaintiff, as such agent, duly warranted that
40 the said iron was of the brand and quality aforesaid and did not contain any other or different metals or substances in any larger quantities or proportions than as represented in and by said analysis; and the defendant relied upon the said warranty in making the said agreement to purchase the said iron.

The defendant denies that the plaintiff on the 9th day of June, 1880, or at any other time, delivered on the wharf in the city of New York, or at any other place, any iron in fulfillment of said contract, but admits and alleges that on said 9th day of June he delivered

on said wharf as such agent as aforesaid under said contract, and not otherwise, 498 tons seven hundred-weight two quarters and sixteen pounds of iron, which was not accepted by defendant in fulfillment of said contract, but merely received and trans-
41 ported to its place of business in Troy, New York, to be there examined and analysed, and if found to be of the quality and description required by the terms and conditions of said contract to be then finally accepted and paid for by the defendant within 30 days; that the defendant, as soon as the said iron arrived at its said place of business, caused the same to be carefully and duly examined, tested, and analysed by competent chemists, when it was discovered that said iron was not in fact of the description or quality required by the terms and conditions of said contract, but of an inferior quality, and that it contained a larger proportion of other metals and substances than as warranted, represented, and stated in said analysis referred to in and made a part of said contract, to
42 wit, more than three-hundredths of one per centum of phosphorus and a much larger quantity or proportion of that substance, more than a trace of sulphur and a considerable quantity of that substance, and more than ninety-hundredths of one per centum of silicon and a much larger quantity or proportion of that substance, so that said iron was thereby rendered improper and unfit for the use for which it was designed and purchased by the defendant; that the defendant immediately notified the plaintiff of the results of said examinations and analysis and of the defective quality and conditions of said iron, and refused to accept or pay for the same, on the grounds that the same was not of the quality or description called for by said contract and the analysis therein referred to. The defendant denies any knowledge or information sufficient to
43 form a belief whether the plaintiff has sold the said iron or goods for the account of the defendant or for the best price that could be obtained, or for any price, or for any sum of money whatever, or whether the plaintiff has paid, laid out, or expended on such resale any sum of money whatever for necessary and reasonable expenses, and it therefore denies each and every of said allegations; and the defendant denies that there is a balance due to the plaintiff from the defendant of $8,930.15, or any other balance or sum whatever, under said contract or otherwise. And the defendant also denies that it has become or now is justly indebted to the plaintiff in the sum of $1,874.09, or any other sum, for expenses in making the resale of said iron, or otherwise.

44 Fourth. For another and separate answer and defence to the second count or cause of action alleged in the complaint, the defendant alleges that the letter referred to in said contract marked B, annexed to the complaint, had been previously written and sent by Mr. Lunberg, the plaintiff, as agent of the firm or copartnership of N. M. Hoglund's Sons and Company, of Stockholm, in the Kingdom of Sweden, under the date of February 6, 1880, setting forth the analysis of the said brand of iron as follows: "Carbon, .5 (five-tenths of one per centum); graphite, 3.7 (three and seven-tenths of one per centum); silicon, .75 (seventy-five hundredths of

one per centum); phosp., .024 (twenty-four thousandths of one per centum); sulphur, .02 (two-hundredths of one per centum); manganese, .684 (six hundred and eighty-four thousandths of one per
45 centum);" that the plaintiff, as such agent as aforesaid, in and by said contract, agreed to sell, and the defendant agreed to buy, iron as mentioned in said contract and of the quality described in said analysis, and not other or different, and the plaintiff, as such agent, duly warranted that the said iron was of the brand and quality aforesaid and did not contain any other or different metals or substances in any larger quantities or proportions than as represented in and by said analysis, and the defendant relied upon the said warranty in making the said agreement to purchase the said iron.

The defendant denies that the plaintiff, on the 9th day of June, 1880, or at any other time, delivered on the wharf, in the city of New York, or at any other place, any iron in fulfillment of said contract,
46 but admits and alleges that on said 9th day of June he delivered on said wharf, as such agent as aforesaid, under said contract and not otherwise, 331 tons 16 hundred-weight three quarters and twelve pounds of iron, which was not accepted by defendant in fulfillment of said contract, but merely received and transported to its place of business in Troy, New York, to be there examined and analysed, and, if found to be of the quality and description required by the terms and conditions of said contract, to be then finally accepted and paid for by the defendant within 30 days; that the defendant, as soon as said iron arrived at its said place of business, caused the same to be carefully and duly examined, tested, and analysed by competent chemists, when it was discovered that said iron was not in
47 fact of the description or quality required by the terms and conditions of said contract, but of an inferior quality, and that it contained a larger proportion of other metals and substances than as warranted, represented, and stated in said analysis referred to in and made a part of said contract, to wit: more than seventy-five hundredths of one per centum of silicon and a much larger quantity or proportion of that substance, more than twenty-four thousandths of one per centum of phosphorus and a much larger quantity or proportion of that substance, more than two-hundredths of one per centum of sulphur and a much larger quantity or proportion of that substance, so that said iron was thereby rendered improper and unfit for the use for which it was designed and purchased;
48 and the defendant denies that said iron was in accordance with the analysis furnished the defendant by the plaintiff on or about the 6th day of February, 1880, or as specified in said contract; that the defendant immediately notified the plaintiff of the results of said examinations and analysis and of the defective quality and condition of said iron, and refused to accept or pay for the same, on the grounds that the same was not of the quality or description called for by said contract and the analysis therein referred to. The defendant admits that while said iron remained in its yard it used nineteen tons seven hundred-weight and fifteen pounds, for which it paid plaintiff the agreed price,

to wit, the sum of $929.12, but alleges that the same was
49 used by its servants by mistake and inadvertence, after it had rejected the same as not in accordance with said contract, and given notice to the plaintiff to remove the same, which he for a long time neglected to do. The defendant denies any knowledge or information sufficient to form a belief whether the plaintiff has sold the said iron or goods for the account of the defendant for the best price that could be obtained, or for any price or for any sum of money whatever, or whether the plaintiff has paid, laid out, or expended on such resale any sum of money whatever for necessary or reasonable expenses, and it therefore denies each and every of said allegations, and the defendant denies that there is a balance due to the plaintiff from the defendant of $5,880.60 or any other balance or sum whatever under said contract or otherwise; and the defendant also denies that it has be-
50 come or now is justly indebted to the plaintiff in the sum of $885.19 or any other sum for expenses in making the resale of said iron or otherwise.

Fifth. For another and separate answer and defence to the third count or cause alleged in the complaint the defendant, to avoid unnecessary repetition, refers to and adopts all the denials and allegations contained in the third and fourth answers and defences hereinbefore set forth and makes them a part of this statement and defence without repeating the same; and the defendant denies that it refused to give up the said iron except on the payment by the plaintiff of the sum of $622.67 or any other sum for freight or otherwise; and it also denies that the plaintiff, in order to obtain
51 the said iron, was compelled to or did for any such reason pay to the defendant the amount of the freight from New York to Troy or any amount whatever, or that the sum of $622.67 or any other sum remains due or owing from the defendant to the plaintiff for freight on said iron from New York to Troy collected by defendant of the plaintiff.

Sixth. For another and separate answer and defence to the fourth count or cause of action alleged in the complaint, the defendant, to avoid unnecessary repetition, refers to and adopts all the denials and allegations contained in the third and fourth answers and defences hereinbefore set forth, and makes them a part of this statement and defence without repeating the same; and the defendant denies that the plaintiff did or performed for the defendant any work,
52 labor, or services in or about the sale of said iron for defendant's account, or otherwise, or that the same were reasonably worth the sum of $669.07, or any other amount, or that the same, or any part thereof, is due or payable from the defendant to the plaintiff.

Seventh. For another and separate answer and defence to the whole complaint, the defendant alleges that after the said iron had been received, examined, and analysed by the defendant and found defective, and a small portion thereof had been used by mistake, as alleged in the third, fourth, and fifth defences, which said allegations are adopted and made part hereof without being repeated

herein, the defendant duly notified the plaintiff thereof and offered to pay for the portion thus used, and demanded that the
53 plaintiff should repay to the defendant the expenses of transporting the said iron from New York to Troy, to wit, the sum of $622.67, and that he should also receive back the said iron, except the small portion used as aforesaid, as defective and insufficient to meet the requirements of said contract; and the plaintiff, in consideration of the payment by the defendant for the iron inadvertently used by its servants as aforesaid and of the relinquishment by the defendant of all claims under said contract, did thereupon allow and pay to the defendant the said sum of $622.67, in full satisfaction and settlement of the said expenses of transportation of said iron from New York to Troy, and also received back the said iron not used by mistake, as aforesaid; all of which was in full satis-
54 faction and settlement of all claims and demands by either of said parties under said contract.

Wherefore the defendant demands judgment in this action dismissing the complaint, with costs.

PARKER & COUNTRYMAN,
Attorneys for Defendant.

Office and post-office address: Cor. State & Lodge Sts., Albany, N. Y.

NORTHERN DISTRICT OF NEW YORK, } ss:
City and County of Albany, }

Selden E. Marvin, of Albany, N. Y., being duly sworn, says that he is the treasurer of the above-named defendant, The Albany and Rensselaer Iron and Steel Company; that the foregoing answer is true of his own knowledge, except as to the matters therein stated to be alleged on information and belief, and as to those matters he believes it to be true.

55 SELDEN E. MARVIN.

Subscribed and sworn to before me December 31st, 1882.
[L. S.] CLIFFORD D. GREGORY,
Notary Public, Albany Co.

Endorsed: U. S. circuit court, S. D. of N. Y. Gustaf Lundberg against The Albany and Rensselaer Iron and Steel Company. Answer. Parker & Countryman, attorneys for defendant, cor. of State & Lodge streets, Albany, N. Y. U. S. circuit court. Filed Jan. 6, 1882. Joseph M. Deuel, clerk.

56 FRIDAY, *April* 27, 1883.

The court meets pursuant to adjournment, and is opened by proclamation.

Present: Judge Coxe.

GUSTAV LUNDBERG
vs.
THE ALBANY AND RENSSELAER IRON AND STEEL COMPANY.

On motion of Everit P. Wheeler, Esqr., of counsel for the plaintiff in the above-entitled action, ordered, — trial.

Jurors sworn.

Philip Seligman, John H. Johnston, John K. Lasher, Wm. R. Sergeant, Wm. W. Reed, Wm. McBride, Richard Stout, John H. Dusenbery, Jas. F. Smith, Jas. Aitkin, Everit Ward, David S. Page.

Mr. Wheeler opens the case on the part of the plaintiff.

57 Evidence for the plaintiff.

Pl'ff's Exhibits Nos. 1, 2, 3, 4, 5, 6.
Deposition of O. Anderson read.
" " Bernhard Feruquish "
" " Net. Eraiesa "
" " Hailold Dilner "
" " A. E. Cassell "
" " J. O. Hansen "
" " Otto M. Hogland "
" " H. Horngsen "

GUSTAV LUNDBERG
vs.
THE ALBANY AND RENSSELAER IRON & STEEL CO.

MONDAY, *April* 30, 1883.

This case being still on trial, the jurors sworn in it are called and severally answer to their names.

Evidence for the plaintiff.

Arthur H. Elliott sworn.
Jas. B. McIntosh "
Gustav Lundberg "

GUSTAV LUNDBERG
vs.
THE ALBANY AND RENSSELAER IRON AND STEEL CO.

TUESDAY, *May* 1, 1883.

58 This cause being still on trial, the jurors sworn in it are called and severally answer to their names.

Evidence for the plaintiff.

Arthur H. Elliott recalled.
Deposition of Edgar R. Hills read.
" " Stephen P. Sharpless "
Samuel C. Eaton sworn.
Chas. Taylor "

Edwin Countryman, Esq., counsel for the defendant, moves to dismiss the complaint herein, and is heard in support of said motion.
Mr. Wheeler is heard in opposition thereto.
The court denies said motion, and Mr. Countryman excepts to the ruling of the court in so doing.

GUSTAV LUNDBERG
vs.
THE ALBANY & RENSSELAER IRON & STEEL CO.

WEDNESDAY, *May* 2, 1883.

This case being still on trial, the jurors sworn in it are called and severally answer to their names.

Evidence for the plaintiff.

59 Charles F. Chandler, sworn.

Edwin Countryman, Esqr., counsel for the defendant, opens the case on the part of the defendant.

Evidence for the defendant.

Chas. F. Armberg, sworn.
Thos. H. Garrett, "
Robert W. Hunt, "
Alfred T. Bertolit, "

THURSDAY, *May* 3, 1883.

The court meets pursuant to adjournment and is opened by proclamation.

Present: Judge Coxe.

GUSTAV LUNDBERG
vs.
THE ALBANY AND RENSSELAER IRON & STEEL CO.

This case being still on trial the jurors sworn in it are called and severally answer to their names.

Evidence for the defendant.

Deposition of T. M. Brown, read.
Deposition of P. W. Shiner, read.
60 " Alex. H. Sherard, read.
" D. W. Humphrey, "
Robert W. Hunt, recalled.
Dep'n of Sam'l A. Ford, read.
" Wm. Metcalf, "
John M. Sherard, sworn.
Selden E. Marvin, "
Dep. of W. O. A. Wuth, read.
Wm. O. A. Wuth sworn.

Evidence for the plaintiff.

Gustav Lundberg recalled.

GUSTAV LUNDBERG
vs.
THE ALBANY AND RENSSELAER IRON AND STEEL CO.

FRIDAY, *May* 4, 1883.

This case being still on trial, the jurors sworn in it are called and severally answered to their names.

Mr. Countryman moves that the court direct the jury to find a verdict for the defendant.

The court denies said motion, and Mr. Countryman excepts to the ruling of the court in so doing.

61 Mr. Countryman sums up the case on the part of the defendant.

Mr. Wheeler sums up the case on the part of the plaintiff; charge is thereupon given by the court to the jury, who retire in charge of an officer duly qualified to attend them, and on their return say that they find a verdict for the plaintiff in the sum of fifteen thousand nine hundred and sixty-nine dollars and thirty-four cents ($15,969.34), and so say they all.

Counsel for the respective parties herein consent in open court that said verdict be taken, subject to correction hereafter, provided the same may be necessary.

Mr. Countryman moves for a new trial.

On motion of Mr. Countryman, ordered, that defendant have a stay of proceedings on the verdict for sixty days within which to argue motion for a new trial, or to prepare and serve a bill of exceptions herein.

62 Immediately after the charge, and prior to the retiring of the jury, Mr. Countryman excepts to the ruling of the court in refusing certain requests to charge, which he states.

SOUTHERN DISTRICT OF NEW YORK, *ss:*

I, Timothy Griffith, clerk of the circuit court of the United States for the southern district of New York, do hereby certify that the foregoing is a correct and true copy of the minutes of trial entered in my office in the above-entitled cause, and of the whole of said minutes.

Witness my hand & official seal this 25th day of August, A. D. 1883.

[L. S.] TIMOTHY GRIFFITH, *Clerk.*

63 *Judgment, August* 25, 1883.

United States Circuit Court, Southern District of New York.

GUSTAF LUNDBERG
against
THE ALBANY AND RENSSELAER IRON AND STEEL COMPANY.

This cause being at issue and regularly placed upon the calendar of this court, and regularly noticed for trial by both parties, and the

issues having been tried before the Hon. Alfred Coxe, circuit judge, and a jury, at a stated term of said circuit court held at the United States court-house, in the city of New York, on the 4th day of May, 1883, and the jury having rendered a verdict in favor of the complainant for the sum of fifteen thousand nine hundred and sixty-nine dollars and thirty-four cents, and the complainant's costs having been duly taxed at and adjusted, on notice, at the sum of

64 five hundred and twelve dollars and eighty cents, now, on motion of McDaniel & Souther, solicitors for the complainant, it is considered and adjudged that the complainant, Gustaf Lundberg, recover of the defendant, The Albany and Rensselaer Iron and Steel Company, the sum of sixteen thousand two hundred and sixty-four dollars and seventy-seven cents (being the amount of said verdict, together with legal interest therein from the rendition thereof), and also the said sum of five hundred and twelve dollars and eighty cents, costs as aforesaid, amounting in the aggregate to the sum of sixteen thousand seven hundred and seventy-seven dollars and fifty-seven cents, and that the complainant have execution therefor.

Judgment signed this twenty-fifth day of August, 1883.

TIMOTHY GRIFFITH, *Clerk.*

65 Endorsed: U. S. circuit court, so. dist. of N. Y. Gustaf Lundberg ag'st The Albany & Rensselaer Iron & Steel Company. Judgment-roll. McDaniel & Souther, compl't's sol'rs, 8 & 10 Pine St., N. Y. 2.30 o'clock p. m. U. S. circuit court. Filed Aug. 25, 1883. Timothy Griffith, clerk.

66 *Bill of Exceptions.*

In the Circuit Court of the United States for the Southern District of New York.

GUSTAF LURDBERG

against

THE ALBANY AND RENSSELAER IRON AND STEEL COMPANY.

Afterwards, to wit, on the 27th day [of] April, in the year 1883, at the United States circuit court room, in the city and State and southern district of New York, before the Honorable Alfred C. Coxe, sitting as a circuit judge of the second circuit of the United States, at a regular term of said circuit court, comes as well the said Gustaf Lundberg, by his attorneys, McDaniel, Wheeler, and Souther, as the said Albany and Rensselaer Iron and Steel Company, by Parker & Countryman, its attorneys; and the jurors of the jury, being called, likewise come; and, after being duly elected, tried, and sworn to try the several issues within joined, the counsel for the said plaintiff, learned in the law, gave on his behalf evidence as follows:

67 I. The contract between plaintiff and defendant, dated February 10, 1880, marked Plaintiff's Exhibit No. 1.

Contract.

N. M. Höglund's Sons & Co., Stockholm; Gustaf Lundberg, successor to Nils Mitander:

38 KILBY STREET, BOSTON, *Feb.* 10, 1880.

I, Gustaf Lundberg, agent for N. M. Höglund's Sons & Co., of Stockholm, agree to sell, and we, Albany and Rensselaer Iron & Steel Company, Troy, N. Y., agree to buy, the following Swedish charcoal grey pig-iron, viz., 500 tons of brand NB G P H, at a price of forty-eight (848) dollars, American gold, per ton, of 2,240 lbs., delivered on wharf [at] New York, duty paid; said iron to be in accordance with an analysis furnished in Gustaf Lundberg'- letter of 6th June.

Payment in gold in Boston or New York funds within 30 days from date of ship's entry at custom-house.

Shipment from Sweden during the season, say May next, or sooner, if possible. The above quantity, hereby contracted
68 for to be subject to such reduction as may be necessitated by natural obstacles and unavoidable accidents.

The seller not accountable for accidents or delays at sea.

Signed in duplicate.

Accepted.

GUSTAF LUNDBERG.

Accepted.

ALBANY & RENSSELAER IRON & STEEL COMPANY.

H. The contract, dated February 11, 1880, for three hundred tons [of] pig-iron, marked Plaintiff's Exhibit No. 2.

Contract.

N. M. Höglund's Sons & Co., Stockholm; Gustaf Lundberg, successor to Nils Mitander.

38 KILBY STREET, BOSTON, *February* 11, 1880.

E. P. B. P., 25.

I, Gustaf Lundberg, agent for N. M. Höglund's Sons & Co., Stockholm, agree to sell, and we, Albany & Rensselaer Iron & Steel Co., Troy, N. Y., agree to buy, the following Swedish charcoal, grey pig-iron, viz: 300 tons of brand S B V E & NB [8] B K, at a price of forty-eight (848) dollars, American gold, per ton of 2,240 lbs.,
69 delivered on wharf, New York., duty paid,

Said iron to be in accordance with the analysis as furnished the Albany & Troy Iron and Steel Co. in Mr. Lundberg's letter of 6th February, 1880.

Payment in gold in Boston or New York funds within 30 days from date of ship's entry at custom-house.

Shipment from Sweden during the season, say May next, or earlier if possible.

The above quantity hereby contracted for to be subject to such

reduction as may be necessitated by natural obstacles and unavoidable accidents.

The seller not accountable for accidents or delay at sea.

Signed in duplicate.

Accepted.

GUSTAF LUNDBERG.

Accepted.

ALBANY & RENSSELAER IRON & STEEL COMPANY.

70 III.

TROY, N. Y., *May* 25, 1880.

Gustaf Lundberg, Esq., 38 Kilby street, Boston, Mass.

DEAR SIR: Yours 24th inst. rec'd. When the steamer with the iron arrives at New York let the captain report or your New York agent report to our New York office, 56 Broadway, for shipping instructions.

Very truly, SELDEN MARVIN.

71 IV. A letter from defendant to plaintiff, dated August 20, 1880, marked Plaintiff's Exhibit No. 4.

AUGUST 20, 1880.

Gustaf Lundberg, Esq., 38 Kilby street, Boston, Mass.

DEAR SIR: We are just in receipt of the analyses of the samples of your iron sent to an outside chemist of high repute, and give you the result:

	Sulphur.	Phosphorous.
N B B B K	0.007	0.049
S B V E	0.005	0.044
G P H	Trace.	0.052

Fully corroborating the reports as made by our chemist and justifying the position we have heretofore taken. The iron is not what we bought and is not suitable for the purposes — we purchased it. It is here subject to your order and to such charges as we may have been subjected to.

What shall we do with it?

Very truly, &c., SELDEN E. MARVIN, *Treas'r.*

V. A letter from plaintiff to defendant, dated December 4,
72 1880, marked Plaintiff's Exhibit No. 5.

Gustaf Lundberg, agent for N. M. Höglund's Sons & Co., Stockholm.

38 KILBY STREET, BOSTON, *Dec.* 4, 1880.

Albany & Rensselaer Iron & Steel Co., Troy, N. Y.

GENTS: As you have declined to accept and pay for the Swedish pig-iron mentioned in your contracts with me as agent for N. M. Höglund's Sons & Co., dated Boston, February 10th, 1880, and Feb-

ruary 11th, 1880, I give you notice that I shall sell the iron for your account and hold you responsible for the difference.

Yours truly, GUSTAF LUNDBERG.

VI. A letter from the defendant to the plaintiff, dated February 14, 1881, marked Plaintiff's Exhibit No. 6.

The Albany & Rensselaer Iron & Steel Company, Troy, New York, Fort Edward, Hudson.

TROY, N. Y., *Feb.* 14, 1881.

Gustaf Lundberg, Esq., 38 Kilby St., Boston, Mass.

73 DEAR SIR: We have received your letter of the 11th inst., enclosing your check for six & $\frac{50}{100}$ dollars to pay bill, $6.30, charges on 10 tons iron. The dif'c. of 20c. please adjust in the freight item when settled.

Our charges for freight and cartage on the iron as it now lies amount to eighty-eight (88) cents per ton.

Very truly, &c., SELDEN E. MARVIN, *Treas.*,
Per GEO. H. OTIS.

Plaintiff's counsel read in evidence the deposition of O. Anderson, a witness examined in Stockholm under commission on behalf of the plaintiff, as follows:

O. ANDERSON, of Ramshyttan, manager of iron works, aged 49 years and upwards, being duly and publicly sworn pursuant to the directions hereto annexed and examined on the part of the complainant, doth depose and say as follows:

Direct interrogatories:

First. What is your age, residence, and occupation, and do you know the plaintiff and defendant?

74 To the first interrogatory he saith: I am 49 years of age, reside at Ramshyttan, and am manager and part owner of Ramshyttan Iron Works, and I do not know either defendant or plaintiff.

Second. How long have you been engaged in that occupation?

To the second interrogatory he saith: 17 years.

Third. In what employ, if any, were you during the winter of 1879 and 1880?

To the third interrogatory he saith: Manager of the iron works.

Fourth. How long have you been in that employ?

To the fourth interrogatory he saith: 17 years.

Fifth. What was the character of your employment during that time?

To the fifth interrogatory he saith: I was manager of the works.

Sixth. What experience, if any, have you had in and about the examination and analysis of iron ores and pig-iron and in the manufacture of iron?

To the sixth interrogatory he saith: Only the practical part of the iron manufacture.

Seventh. Do you remember the quality and character of
75 the ores used in the manufacture of iron at Pershytte furnace during the winter of 1879 and 1880? If so, state what they were, minutely and in detail.

To the seventh interrogatory he saith: Yes; we used exclusively Pershyttan's ore with only 2 % wikes, which does not contain more phosphorus than the ore from Pershyttan.

Eighth. State whether or not a portion of the iron manufactured at such furnace during that time was sold to N. M. Höglund's Sons & Company?

To the eighth interrogatory he saith: I sold the iron made to Mr. Gredin, at Nova, who, as I am informed, sold a portion of it to Messrs. N. M. Hoglund's Sons & Co.

Ninth. If, in answer to the last interrogatory, you state that a portion was so sold to said firm, state how much was so sold and what the marks were upon it. State when it was sold, and how and when it was shipped to N. M. Höglund's Sons & Company?

To the ninth interrogatory he saith: the marks were G P
76 H, but I do not know how much was sold to N. M. Hoglund's Sons & Co., or how it was shipped.

Tenth. State what your means of knowledge are in regard to the percentage of phosphorous, sulphur, and silicon in the iron so as aforesaid sold and shipped to N. M. Höglund's Sons & Company, if you say any was sold and shipped.

To the tenth interrogatory he saith: Of all the iron I sold to Mr. Gredin I know the quality only from analysis made by Bernhard Fernguist, in Orebro, and Adolf Tamm, in Stockholm.

Eleventh. What was the percentage of phosphorous, sulphur, and silicon contained in the iron so as aforesaid sold and shipped to N. M. Höglund's Sons & Company, if you say any was sold and shipped?

To the eleventh interrogatory he saith: As far as I know, no special analysis was made on the iron sold to N. M. Höglund's Sons & Co. No new analysis was made because no change in the ore was observed.

Defendant's counsel objected to so much of the answer as reads as follows: "No new analysis was made because no change
77 in the ore was observed," on the ground that it is not responsive, and as a conclusion, and as hearsay.

Objection overruled. Defendant excepted.

Twelfth. State whether or not any iron was furnished to Bernhard Fernguist in the latter part of 1877 or the early part of 1878; and, if so, when and by whom? How was it marked?

To the twelfth interrogatory he saith: Mr. P. Erikson, then in my employ, sent by my order samples of pig-iron to Bernhard Fernguist at the beginning of 1878, which was marked G. P. H.

Defendant's counsel objected to all of the answer reading as follows: "Sent samples of pig-iron to Bernhard Fernguist marked G. P. H. at the beginning of 1878," on the grounds that it is hearsay and irrelevant. Objection overruled. Defendant excepted.

Thirteenth. For what purpose, if any, was it so furnished, if it was furnished?

To the thirteenth interrogatory he saith: To have a chemical analysis made on that pig-iron.

Fourteenth. State whether or not you or any one else, to
78 your knowledge, received from said Fernguist a certificate of the analysis of said iron; and, if so, when. Who received it?

To the fourteenth interrogatory he saith: I received myself at the end of January, from Bernhard Fernguist, a certificate of the analysis of said iron.

Fifteenth. What knowledge have you of the quality and character of the iron delivered to Mr. Bernhard Fernguist, concerning which you were asked by the twelfth interrogatory?

To the fifteenth interrogatory he saith: It was given to Bernhard Fernguist to learn the quality and character of the iron, or to get a knowledge of how much phosphorous, sulphur, and silicon it contained.

Sixteenth. How did the percentage of sulphur, phosphorous, and silicon contained in the iron so as aforesaid sold to N. M. Höglund's Sons & Company compare with that concerning which you are asked in the twelfth interrogatory?

To the sixteenth interrogatory he saith: I cannot tell, as I had no analysis then made. I only know from previous analyses of the
79 character and quality of the iron and analysis of the ores used in its manufacture.

Seventeenth. State whether or not you know of any iron, other than that sold as aforesaid to N. M. Höglund's Sons & Company, made at Pershytte furnace in or about the latter part of 1879 or the early part of 1880.

To the seventeenth interrogatory he saith: Yes, certainly, other other iron was made, but all of exactly of the same quality.

Defendant's counsel objected [to] the last clause, "but all of exactly [the] same quality," in the answer, on the ground that it is a conclusion, and also immaterial.

Objection overruled. Defendant excepted.

Eighteenth. If you answer the seventeenth interrogatory in the affirmative, state what you know of the character and quality of such other iron.

To the eighteenth interrogatory he saith: I have said it was of exactly the same quality.

Defendant's counsel objected to the answer upon the same grounds.

Objection overruled. Defendant excepted.

Nineteenth. How did it compare in character and quality, and especially in the percentage of silicon, sulphur, and phos-
80 phorous contained therein, with that so sold as aforesaid to N. M. Höglund's Sons & Company? If you say it was similar in quality, state to whom it was sold, and when and how it was shipped to such buyer or buyers.

To the nineteenth interrogatory he saith: All the iron manufact-

ured that winter was sold to Mr. Gredin in Nora, who sold 12,000 hundred-weight to N. M. Höglund's Sons & Co., and all that grey pig-iron was of the same kind.

Defendant's counsel objected to the portion of the answer that reads as follows: "And all that grey pig-iron was of the same kind," on the ground that it is hearsay and opinion.

Objection overruled. Defendant excepted.

Twentieth. State whether you know of any practical tests in the process of manufacturing to which said parcels of iron, or any of them, were put.

To the twentieth interrogatory he saith: In the process of manufacture no special tests were made on this pig-iron, but I know that the iron is used in the manufacture of Siemens & Martin's steel and iron, and there found to be good.

81 Defendant's counsel objected to the following words in the answer: "And there found to be good," on the ground that it is irresponsive, immaterial, and mere opinion.

Objection overruled. Defendant excepted.

Twenty-first. State what was the result, if any, of such tests with reference to the percentage of silicon, phosphorous, and sulphur contained in the iron so tested.

To the twenty-first interrogatory he saith: I cannot state that, as no practical tests were made.

Twenty-second. If you know of any other matter or thing material to the issues and favorable to the plaintiff state the same as fully as if you were especially interrogated in relation thereto.

To the twenty-second interrogatory he saith: I have nothing further to state.

Defendant's counsel reads the cross-interrogatories and answers as follows:

1. Who were the owners or lessees who operated the Pershytte furnace in the year- 1879 and 1880?

To the first cross-interrogatory he saith: Ramshytte Iron Works Company, which includes Pershyttan.

82 2. Are the same persons or is the same corporation still operating the the Pershytte furnace?

To the second cross-interrogatory he saith: Yes.

3. Were you then and are you now interested otherwise than as an employé in the Pershytte furnace or in operating the same in the manufacture of iron? If so, state the nature, extent, or proportion of your interest.

To the third cross-interrogatory he saith: I am manager and part owner in Ramshytte Iron Works to about one-fourth.

4. State all of the different kinds of iron manufactured at the Pershytte furnace in 1879 and 1880.

To the fourth cross-interrogatory he saith: Only pig-iron was made, chiefly grey, but a smaller part, mottled and white.

5. State all of the different ores used at said furnace in the man-

ufacture of iron during those years, and the difference in the quality and character thereof.

To the fifth cross-interrogatory he saith: Pershytte and 2% Wiker ore, the character of which ore is shown by analysis by Adolf Tamm.

83 The portion of the answer reading as follows: "The character of which ore is shown by analysis by Adolf Tamm," defendant's counsel declined to read on the ground that it is irresponsive.

Plaintiff's counsel proposed to read the part declined by defendant.

Objected to by defendant as not responsive and as hearsay.

Objection overruled. Defendant excepted.

And the same was read in evidence by the plaintiff accordingly. The analysis of Adolf Tamm was subsequently excluded by the court.

6. Where were these ores obtained and of whom were they purchased?

To the sixth cross-interrogatory he saith: The ores are taken from mines belonging to Ramshytte Iron Works.

7. Were the proprietors or operators of the Pershytte furnace the owners or lessees of the mine or mines from which such ores were obtained, and were the mines worked by them or under their control or management?

To the seventh cross-interrogatory he saith: They were owners, and the mines were worked under my management.

84 8. Were such ores, or any of them, analyzed, to your personal knowledge, before being used in the Pershytte furnace in the manufacture of iron? If so, which of them or what portion thereof, by whom, and by what methods, if you have personal knowledge?

To the eighth cross-interrogatory he saith: No analysis has been taken of this ore since 1866 by Bernhard Fernguist until one made this year by Adolf Tamm.

9. Have N. M. Höglund's Sons & Company any interest in the Pershytte furnace, or in operating the same; and did they have such interest, or any interest, therein in 1879 or 1880?

To the ninth cross-interrogatory he saith: No, N. M. Höglund's Sons & Co. neither have nor have had any interest in the furnace.

10. Are N. M. Höglund's Sons & Company habitual purchasers of iron manufactured at the Pershytte furnace; if so, how long have they been such purchasers, to your knowledge?

To the tenth cross-interrogatory he saith: I have never sold any iron to N. M. Hoglund's Sons & Co. The usual buyer is G. Gredin, but to whom he sells it I do not know.

85 11. If N. M. Höglund's Sons & Company purchased any of the iron manufactured at the Pershytte furnace in the winter of 1879 and 1880, mentioned in the direct interrogatories, state whether the contract or terms of purchase or the negotiations were in writing; if so, attach a copy of the contract or letters or

writings containing the contract, terms, or negotiations of such purchase.

To the eleventh cross-interrogatory he saith: I did not sell any iron to N. M. Hoglund's Sons & Co.

12. Did you personally negotiate the sales of the iron thus referred to, or have you any personal knowledge of the terms of the sale?

To the twelfth cross-interrogatory he saith: No.

13. What was the price charged and received for the iron thus sold to N. M. Höglund's Sons & Company?

To the thirteenth cross-interrogatory he saith: I do not know.

14. Have you personal knowledge of the quality and character of the particular ores used in the manufacture of iron at Per-
86 shytte furnace during the winter of 1879 and 1880? State how, in what manner, and from whom you derived any and all of your knowledge or information on the subject.

To the fourteenth cross-interrogatory he saith: My knowledge of the character and quality of the ores used is based on the analyses before mentioned.

15. Did you personally make a chemical analysis of the iron, or any portion of it, thus manufactured in the winter of 1879 and 1880, or thus sold to N. M. Höglund's Sons and Company; if so, what portion thereof, and what method or process did you adopt and follow, and what was the result?

To the fifteenth cross-interrogatory he saith: I never made any chemical analysis.

16. Is the whole of your answer to the seventh direct interrogatory based on personal knowledge, or is it, in whole or in part, derived from others, or from books, records, or memoranda written or made by other persons? If the latter, state in detail the sources of your knowledge or information.

To the sixteenth cross-interrogatory he saith: My answer
87 to the seventh interrogatory is based on the books kept at Pershytte furnace.

17. Is the whole of your answer to the eleventh direct interrogatory based on personal knowledge, or is it, in whole or in part, derived from others, or from books, records, or memoranda written or made by other persons? If the latter, state in detail the sources of your knowledge or information.

To the seventeenth cross-interrogatory he saith: I repeat that my answer to the eleventh interrogatory was based on the books kept at Pershytte furnace.

18. Have you personal knowledge of the marks on the iron sold from the Pershytte furnace to N. M. Höglund's Sons & Company, or do you obtain your information from memoranda or entries thereof, or from other persons; if so, who informed you and who made the entries or memoranda? Did you personally examine or deliver the iron sold to N. M. Hoglund's Sons and Company at the time of the sale?

To the eighteenth cross-interrogatory he saith: I have no knowledge of the transaction with N. M. Höglund's Sons & Co.; but all

iron manufactured during the seventeen years I have been at
88 Pershyttan has been marked with G. P. H.

19. Did the proprietors or operators of the Pershytte furnace employ a professional chemist to analyze the ores used and the iron manufactured in the furnace in 1879 and 1880? If so, what was his name?

To the nineteenth cross-interrogatory he saith: Any analysis was not made during those years.

20. How far did Bernhard Fernguist reside from the Pershytte furnace in 1877 and 1878?

To the twentieth cross-interrogatory he saith: Twenty-six kilometers.

22. Did you, personally, receive from Bernhard Fernguist a certificate of analysis of any iron? Were you present when or have you personal knowledge that any one else received such a certificate from Bernhard Fernguist?

To the twenty-second cross-interrogatory he saith: I received personally the certificate of analysis from Bernhard Fernguist toward the end of January, 1878, and no one else received such a certificate.

23. When was the iron manufactured that you *may* state
89 was furnished to Bernard Fernguist in 1877 or 1878?

To the twenty-third cross-interrogatory he saith: It was manufactured just before it was furnished to Bernhard Fernguist?

24. Did you ever make an analysis of the iron, or any portion of it, a sample of which was sent to Bernhard Fernguist in 1877 or 1878; if so, when, where, and by what method or process? State the same in full and in detail.

To the twenty-fourth cross-interrogatory he saith: No, I cannot make an analysis.

25. Did you ever make an analysis of the iron, or any portion of it, manufactured in the Pershytte furnace in the latter part of 1879 or the early part of 1880, and referred to in the seventeenth direct interrogatory?

If so, when, where, and by what method or process? State the same in full and in detail, and what was the result?

To the twenty-fifth cross-interrogatory he saith: No.

26. Is the whole of your answer to the sixteenth direct interrogatory based on personal knowledge, or is it, in whole or in part, derived from others, or from books, records, or memoranda
90 written or made by other persons? If the latter, state in detail the sources of your knowledge or information.

To the twenty-sixth cross-interrogatory he saith: From the books of Pershytte furnace, of course.

27. Is the whole of your answer to the nineteenth direct interrogatory based on personal knowledge, or is it in whole or in part derived from others or from books, records, or memoranda made by other persons? If the latter, state in detail the sources of your knowledge or information.

To the twenty-seventh cross-interrogatory he saith: From the books just mentioned and from analysis of the iron and the ore.

28. Did you personally make the practical tests referred to in

your answer to the twentieth direct interrogatory; if not, by whom were they made, giving the names of the persons; and how do you get your information?

To the twenty-eighth cross-interrogatory he saith: I made no tests.

29. If you personally made or applied the practical tests
91 last above referred to, state the nature and method of such tests in detail.

To the twenty-ninth cross-interrogatory he saith: No tests were made.

30. Did you read or hear read these cross-interrogatories, or any of them, before answering the direct interrogatories?

To the thirtieth cross-interrogatories he saith: Yes; I read both the interrogatories and cross-interrogatories before answering.

31. Did you read or hear read any of the depositions of other witnesses examined under this commission, or were you present at the examination of such witnesses, before giving your evidence? If so, state which of such depositions or witnesses.

To the thirty-first cross-interrogatory he saith: No.

32. If you know of any other matter or thing material to the issues and favorable to the defendant, state the same as fully as if you were especially interrogated in relation thereto.

To the thirty-second cross-interrogatory he saith: I have nothing more to state.

92 Plaintiff's counsel read in evidence the deposition of Bernhard Ferguist, a witness examined under commission on behalf of plaintiff, as follows:

BERNHARD FERNGUIST, of Orebro, professor of chemistry and chemical technology, aged 47 years and upwards, being duly and publicly sworn pursuant to the directions hereto annexed and examined on the part of the complainant, doth depose and say as follows:

Direct interrogatories:

First. What is your age, residence, and profession, and do you know the plaintiff and defendant?

To the first interrogatory he saith: I am 47 years of age; reside at Orebro; am professor in chemistry and chemical technology in the technical school at Orebro, and I do not know either plaintiff or defendant.

Second. How long have you been engaged in that profession and where; and what experience have you had in it and in preparation for it?

To the second interrogatory he saith: In 1857 and 1858 I was amanuensis in chemistry at the University of Upsala; in 1859 became a teacher and afterwards professor in chemistry at the
93 technical high school in Orebro; I have for thirty years studied chemistry and had it for my principal occupation.

Third. Have you had any experience in the analysis of iron; and, if so, what? State the extent of such experience minutely and in detail.

To the third interrogatory he saith: I have for more than twenty years been occupied in making analyses of ores, iron, &c.; I have made at least two thousand analyses of different kinds.

Fourth. State whether or not you received from P. Erikson in the latter part of 1877 or the early part of 1878 a sample of iron for analysis; if so, how was it marked and what was its weight?

To the fourth interrogatory he saith: Yes; in the early part of 1878 I received from P. Erikson some pig-iron for analysis; how it was marked or its weight I do not recollect.

Fifth. State whether you analyzed the same and when.

To the fifth interrogatory he saith: I analyzed it, and on the 24th of January, 1878, the analysis was ready.

Sixth. State the process of such analysis.

94 To the sixth interrogatory he saith: The process which has been exclusively used in Sweden since 1860 is invented by Professor V. Eggerts, and is thus briefly described: 1 gram iron is dissolved in nitric acid, the solution is evaporated to dryness, whilst a little muriatic acid is added; the dry rest is dissolved in muriatic acid, and is filtered, with the addition of a little water, whereupon the phosphoric acid is precipitated at 40° centigrade with solution of molybdenum. The precipitate, which contains 1.63% phosphorus, is taken upon a weighed filtre and is weighed after being dried at 100° centigrade. Sulphur is determined by putting muriatic acid to a boiling mixture of 5 gram iron, 10 gram chlorate of potassium and water, evaporating to dryness, solving in muriatic acid and water; filter and precipitate with chloride of carium. Silicon is determined in 2 grams of iron by the usual generally-known process.

Defendant's counsel raised the question and objected to the answer on the ground that it does not appear that the iron analyzed by Fernguist was the iron in question or any iron from any of the furnaces in question during the year this iron was made, and objected that evidence on that subject is entirely immaterial to

95 the issues here, it not being legitimate evidence bearing upon the quality of the iron sold by the plaintiff to this defendant, and it being entirely immaterial and incompetent to give testimony of analyses in 1878.

Objection overruled. Defendant excepted.

Seventh. State whether or not the process employed by you for such analysis was that employed in Sweden for the analysis of iron during the year 1878 and prior and subsequent thereto.

To the seventh interrogatory he saith: Yes; it was.

Defendant's counsel objected to the question and answer as immaterial and incompetent.

Objection overruled. Defendant excepted.

Eighth. If in answer to the last question you say that such process was in use prior or subsequent thereto, state for how long it had been in use or continued in use as aforesaid, and where and to what

extent; state also whether any other method of analysis of pig-iron was in use for commercial purposes; and, if so, what.

To the eigth interrogatory he saith: I think that Professor
96 Eggert's process for determining phosphorous and sulphur was made known in 1859, and the process for determining silicon long before. These methods are generally used in Sweden, and the most prominent analytici use the same process.

The same objection, ruling, and exception as last above was taken by defendant to the last sentence in the answer.

Ninth. If you made such analysis, state its results with reference to the percentage of phosphorous, sulphur, and silicon respectively contained in the iron so analysed by you.

To the ninth interrogatory he saith: It contained 0.90 per cent. silicon, 0.028 per cent. phosphorous, and trace of sulphur.

The same objection, ruling, and exception as before *was* taken by defendant to this answer.

Tenth. State whether the results of analysis by the method so used by you were absolutely accurate; and, if not, why not; to what extent, if at all, were they inaccurate?

To the tenth interrogatory he saith: No analytical processes are absolute. Concerning the determination of phosphorous there cannot be a difference of more than a few thousands per cent.

97 Eleventh. State to what extent, if at all, the fact, if it be a fact, that the result of an analysis by such method was not absolutely accurate was known at the time you made it, and prior and subsequent thereto.

To the eleventh interrogatory he saith: The analytical processes were then considered exact, and which fact has been confirmed in the subsequent years.

Twelfth. To whom, if to any one, did you deliver a statement of the result of such analysis, and when?

To the twelfth interrogatory he saith: I delivered it to Mr. O. Anderson the result of the analysis [of] the 24th of Jan., 1878.

Thirteenth. Annex a copy of such statement to your deposition.

To the thirteenth interrogatory he saith: I annex hereby the result of the analysis under the letter C, as follows: Silicon, 0.90 per cent. & for phosphorus 0.028 per cent., sulphur trace.

The same objection, ruling, and exception as before was taken by defendant to this answer.

Defendant'- counsel read the cross-interrogatories and answers as follows:

1. Have you heretofore been employed by N. M. Höglund's Sons & Company to analyze iron or ore for them; if so, to what
98 extent and for how long a period have you been so employed?

To the first cross-interrogatory he saith: No.

2. Have you heretofore been employed by the proprietors, lessees, or operators of Pershytte furnace to analyze ore used or iron manu-

factured in that furnace? If so, to what extent and for how long a period have you been so employed?

To the second cross-interrogatory he saith: I have been employed many times by the owner of Pershytte furnace, Mr. O. Anderson; I have been employed during later years.

3. Did you receive the sample of iron referred to in the fourth direct interrogatory from P. Erickson in person? If so, state when and where and the particular circumstances.

To the third cross-interrogatory he saith: I do not recollect if I received them from P. Erickson personally, or if he sent them to me.

4. Did you perform every act in the process employed in the analysis of such sample of iron in person, or were you assisted, and was a portion of the analysis made by some other person or persons? If the latter, state who assisted you and what he or they did in the course of the proceedure.

To the fourth cross-interrogatory he saith: I made the whole analysis myself.

5. Did you make a duplicate analysis from such sample of iron? If yea, state in detail the process and the materials used and the result of such analysis and who took part in the same or any portion, and, if so, what portion thereof.

To the fifth cross-interrogatory he saith: I did not then make any duplicate analysis.

6. State in detail the process or method adopted and the materials used for separating the phosphorus from the iron, and by whom this part of the operation was performed.

To the sixth cross-interrogatory he saith: In my answer to the sixth interrogatory I have in detail stated the process adopted and the materials used for separating the phosphorus from the iron, and no one assisted me in the process.

7. State in detail the process or method adopted and the materials used for separating the silica from the solution, and by whom this was done.

To the seventh cross-interrogatory he saith: I again refer to my answer to the sixth interrogatory. I made the whole analysis myself.

8. Have you since adopted a different process or method of analyzing iron? If so, state what process you now follow in making such analyses, and state in detail wherein it differs from your former method, and your reasons for changing the same.

To the eighth cross-interrogatory he saith: No.

9. Did you read or hear read these cross-interrogatories or any of them before answering the direct interrogatories?

To the ninth cross-interrogatory he saith: No.

10. If you know of any other matter or thing material to the issues and favorable to the defendant, state the same as fully as if you were specially interrogated in relation thereto.

To the tenth cross-interrogatory he saith: I have nothing more to state.

11. Did you read or hear read the deposition of O. Ander-
101 son, taken under this commission, or were you present at the examination of such witness before giving your evidence?

To the eleventh cross-interrogatory he saith: No.

Plaintiff's counsel read in evidence the deposition of Per. Erikson, a witness examined under commission on behalf of plaintiff. The witness gave testimony as to the identity of the samples of the iron furnished Bernhard Fernguist and analyzed by him.

Plaintiff's counsel read in evidence the deposition of Harold Dillner, a witness examined under commission on behalf of plaintiff, as follows:

HAROLD DILLNER, of Nova, officer of the Board of Iron Masters, aged 61 years and upwards, being duly and publicly sworn pursuant to the directions hereto annexed, and examined on the part of the plaintiff, doth depose and say as follows:

Direct interrogatories:

First. What is your name, age, profession, and occupation?
102 To the first interrogatory he saith: My name is Harold Dillner; born [in] 1821, and am an officer in the metallurgic department in the Board of Iron Masters to assist the Swedish iron masters as engineer in the technic metallurgic branches.

Second. How long have you been engaged in that occupation, and what experience, if any, have you had in that profession and in preparation for it?

Third. By what firm or person, if any, were you employed in the latter part of 1879 and beginning of 1880?

Fourth. How long have you been employed by them?

Fifth. In what capacity have you been employed by them?

To the second, third, fourth, and fifth interrogatories he saith: In such a capacity I have during a number of years, consequently also during the years 1879 and 1880, assisted, and do still assist, among others, the owners of Ramshytte-Pershytte and its manager, Mr. O. Anderson, as technical assistant at Pershytte furnace, which, as well as Pershytte mines, are situated about 3,000 meters from Nova, my residence.

Sixth. Do you remember a parcel of pig-iron of 12,000 centners, manufactured at Pershytte furnace during the winter of 1879–
103 '80? If so, state whether you remember a sale of such pig-iron, by whom, if at all, was it sold, and to whom, and when, what is the weight of a centner in English pounds avoirdupois?

To the sixth interrogatory he saith: A Swedish centner is equal to 42.5076 kilograms, but I do not know how much in English pounds avoirdupois.

Seventh. Of what ores was said parcel manufactured?

To the seventh interrogatory he saith: Exclusively of ores from Pershytte mines, except an addition of about 3½ % Viker ore. This latter ore contains a few per cent. manganese and is, therefore, a valuable addition to the ores in our mining district, which are generally not rich in manganese.

Defendant's counsel objected to the last sentence, beginning "this latter ore contains, &c.," on the ground that it is a conclusion and opinion of the witness and not a statement of facts.

Objection overruled. Defendant excepted.

Eighth. If, in answer to the sixth interrogatory, you say that said parcel of pig-iron was sold to the firm of N. M. Höglund's
104 Sons & Co., state how much was so sold and what the marks were upon it, and how and when it was shipped to N. M. Höglund's Sons & Co.

To the eighth interrogatory he saith: The twelve thousand centners pig-iron now in question were marked with the usual and legalized mark of Pershytte furnace, G P H, and were sent in to Nora during the winter of 1880.

Defendants counsel objected to the answer as hearsay. Objection overruled. Defendant excepted.

Ninth. State what your means of knowledge are in regard to the percentage of phosphorus, sulphur, and silicon in the iron so as aforesaid sold and shipped to N. M. Höglund's Sons & Company, if you say any was sold and shipped.

To the ninth interrogatory he saith: We have trustworthy analyses of the ores from Pershytte mines and of pig-iron from Pershytte furnace, which this verify the always excellent quality of the ore and the pig-iron manufactured of it. Any silicon proportional to that in pig-iron made abroad with cokes cannot be produced in Swedish pig-iron as being made with charcoal, particulary as the tem-
105 perature of the blast in our Swedish high furnaces rarely or never is held higher than between 250° to 300° centigrade, even when grey pig-iron is manufactured.

Defendant's counsel objected to all of the answer as hearsay, and as giving the results of analyses made by chemists and not results within the witnesses' own personal knowledge.

The court struck out as follows, beginning with the words "I hearby beg to deliver an analysis," &c., down to and including the words "are so slight in them," and refused to reject the balance; to which ruling the defendant excepted.

Tenth. What was the percentage of phosphorus, sulphur, and silicon contained in the iron so as aforesaid sold and shipped to N. M. Höglund's Sons & Company, if you say any was sold and shipped?

To the tenth interrogatory he saith: I do not know that there exists any special analysis on the 12,000 centners pig-iron now in question. It is not needed to have a special analysis made on every special parcel of pig-iron that is sold from our blast furnaces, particularly, as is the case with pig-iron now in question, when it is
106 made exclusively from ores of Persbytte mines, on which, as well as on the pig-iron manufactured from them, there already exist trustworthy analyses that bear witness to the pure and excellent quality of both the ore and the pig-iron.

Defendant's counsel objected to all except the first sentence of the

answer as immaterial, as hearsay, as a mere conclusion, and as not responsive. Objection overruled. Defendant excepted.

Eleventh. State whether or not you knew of any iron other than that sold, as aforesaid, to N. M. Höglund's Sons & Company, made at the furnace at which you were employed in or about the latter part of 1878 or the early part of 1879.

To the eleventh interrogatory he saith: Where all the other pig-iron manufactured in Pershytte furnace during 1878, 1879, and 1880 has gone I do not know. The freedom from injurious matters and the character of the pig-iron made from Pershytte ores makes this iron, when the temper or number is suitable, convenient for the production of wire rods in open-hearth furnaces, &c

107 Defendant's counsel objected to all of the answer except the first sentence as immaterial, as a conclusion, as hearsay, and as not responsive.

The court struck out as follows: Beginning with the words "I judge" and ending [with] "have reached me;" and refused to reject the balance; to which ruling the defendant excepted.

Twelfth. If you answer the eleventh interrogatory in the affirmative, state what you know of the character and quality of such other iron.

To the twelfth interrogatory he saith: I refer to the preceding answer.

Thirteenth. How did it compare in character and quality, and especially in the percentage of silicon, sulphur, and phosphorus contained therein, with that sold, as aforesaid, to N. M. Höglund's Sons & Company?

To the thirteenth interrogatory he saith: I again refer to my answer to eleventh interrogatory.

Fourteenth. State whether you know of any practical tests in the process of manufacturing to which said parcels, or any of them, were put.

To the fourteenth interrogatory he saith: It is generally
108 known that the iron is of excellent quality, and I made no special tests.

Defendant's counsel objected to all the answer except the words "I made no special test" as a conclusion and immaterial. Objection overruled. Defendant excepted.

Fifteenth. State what was the result, if any, of such tests with reference to the percentage of silicon, phosphorus, and sulphur contained in the iron so tested.

To the fifteenth interrogatory he saith: It is not known to me.

Sixteenth. State whether or not you have read the testimony of Bernhard Fernguist taken under and in pursuance of this commission.

To the sixteenth interrogatory he saith: I have not read the testimony of Bernhard Fernguist.

Seventeenth. If you say that you have read the testimony of said

Fernguist, state what you know as to the process of analysis described by him, and what is your experience in relation thereto.

To the seventeenth interrogatory he saith: I have not read Mr. Fernguist's testimony.

Eighteenth. State whether or not the process employed by him for such analysis was that employed in Sweden for the analy-
109 sis of iron during the year 1878, and prior and subsequent thereto.

To the eighteenth interrogatory he saith: It does not beseem me to give a description of Mr. Fernguist's method of analyzing or its details; but, concerning his analyses, my own experience is that they are as conscientiously, as exactly—made in full harmony with the progress of science.

Defendant's counsel objects to all of the answer, except the first sentence, as immaterial and incompetent.

The court struck out the words "as well as others," and refused to reject the balance; to which ruling and refusal the defendant excepted.

Nineteenth. If, in answer to the last question, you say that such process was in use prior or subsequent thereto, state for how long it had been in use, or continued in use, as aforesaid, and where and to what extent.

Twentieth. State whether the results of analysis by the method so used by him were absolutely accurate, and, if not, why not. To what extent, if at all, were they inaccurate?

110 Twenty-first. State to what extent, if at all, the fact, if it be a fact, that the result of an analysis by such method was not absolutely accurate was known at the time he made it and prior and subsequent thereto?

To the nineteenth, twentieth, and twenty-first interrogatories he saith: I can only refer to my answer to the eighteenth interrogatory.

Defendant's counsel read the cross-interrogatories and answers as follows:

First. Were your employers engaged in operating the Pershytte furnace in the years 1879 and 1880?

To the first cross-interrogatory he saith: Pig-iron was manufactured at Pershyttan in 1879-1880 by the owners of Ramshytte-Pershytte Iron Works.

Second. Were you then, and are you now, interested otherwise than [as] an employe in the Pershytte furnace, or in operating the same?

If so, state the nature, extent, or proportion of your interest.

111 To the second cross-interrogatory he saith: No.

Third. Name all of the different kinds of iron manufactured at the Pershytte furnace in 1879 and 1880, and the difference in the quality and character thereof.

To the third cross-interrogatory he saith: The pig-iron manufactured in 1879 and 1880 differed in no other way than in its temper—that is to say, some of it was made grey, some grey with white mar-

gins, some half white, and some white. In quality and character there was otherwise no difference, as the same ores were used.

Fourth. Name the different ores used at said furnace in the manufacture of iron during those years, and the difference in the quality and character thereof.

To the fourth cross-interrogatory he saith: Ores from Pershytte mines were used in the manufacture during these years; only about 3½ % Viker ore were mixed in the manufacture of the 12,000 centner pig-iron now in question; the character of the Viker ore is just as Pershytte ore—very good.

112 All of the answer except the first sentence defendant's counsel declined to read as irresponsive and as hearsay. Plaintiff's counsel consented that the second sentence, as follows, be stricken out: "Analysis of these ores are annexed to my answers to the direct interrogatories," and proposed to read the remainder of the answer declined by the defendant's counsel.

Defendant's counsel objected on same grounds.

The court permitted plaintiff's counsel to read as proposed, and defendant's counsel excepted.

Fifth. Where were these ores obtained, and of whom?

Sixth. Did the same parties operating the furnace work the mines from which such ores were obtained?

To the fifth and sixth cross-interrogatories he saith: Pershytte mines are owned by a stock company, in which the owners of Ramshyttan Pershyttan have shares. The same owners have, also, Pershytte blast furnace. They use for the most part their own

113 ores in the manufacture of pig-iron.

Seventh. Were any of such ores analyzed, to your personal knowledge, before being used in the manufacture of iron in said furnace? If so, state which of the ores or what portion thereof, when, where, by whom, and by what methods.

Eighth. Was any of the ore, from which the pig-iron referred to in the sixth direct direct interrogatory was manufactured, so analyzed? If so, when, where, by whom, and by what process or method? If the same was analyzed by you, state the course of procedure and the materials used in detail, and give the result of the analysis.

To the seventh and eighth cross-interrogatories he saith: Yes; Bernhard Fernguist, Adolf Tamm, and others have made analyses on these ores. Is is not within my range to describe the method of analyzing. I have not, myself, made any analysis on these ores.

Ninth. Was any of this pig-iron so analyzed? If so, where, when, by whom, and by what process or method of analysis? If the same was analyzed by you, state the course of procedure

114 and the materials used in detail, and the result of the analysis.

To the ninth cross-interrogatory he saith: My answer to the tenth direct interrogatory is my reply to this question.

Tenth. Have N. M. Höglund's Sons and Company any interest in the Pershytte furnace, or in operating the same? Did they have such interest or any interest therein in 1879 or 1880?

To the tenth cross-interrogatory he saith: No.

Eleventh. Have N. M. Höglund's Sons and Company been in the habit of purchasing iron manufactured at the Pershytte furnace; if so, how long have they been such purchasers to your knowledge?

To the eleventh cross-interrogatory he saith: I do not know. With the commercial business of our Swedish iron workers I have nothing to do.

Twelfth. If N. M. Höglund's Sons and Company purchased any of the pig-iron manufactured at the Pershytte furnace in the winter of 1879 and 1880, mentioned in the sixth direct interrogatory, state whether the contract or terms of purchase or the negotiations
115 for the purchase were in writing; if so, attach a copy of the contract, or letters, or writings containing the contract, terms, or negotiations for such purchase.

To the twelfth cross-interrogatory he saith: A. C. Gredin, of Nova, bought of the manufacturers, the owners of Ramshytte Iron Works, the 12,000 centners Pershytte pig-iron now in question, which he afterwards sold to N. M. Höglund's Sons & Co. in Stockholm, but I do not know either the price or other conditions. As I have already said, I have nothing to do with the commercial business of the iron works.

Thirteenth. Did you personally negotiate the sale of the iron thus referred to, or have you any personal knowledge of the terms of the sale?

To the thirteenth cross-interrogatory he saith: No.

Fourteenth. What was the price charged and received for the iron thus sold to N. M. Höglund's Sons and Company?

To the fourteenth cross-interrogatory he saith: I do not know.

Fifteenth. Have you personal knowledge of the quality and character of the particular ores used in the manufacture of this
116 particular parcel of pig-iron at the Pershytte furnace during the winter of 1879 and 1880? State how and from whom you obtained any and all of your knowledge and information on this subject.

To the fifteenth cross-interrogatory he saith: The good quality of the iron is, besides, well known to me personally during my long time of service of more than 20 years in the mining district of Nova.

Defendant's counsel declined to read the answer as not responsive.

Plaintiff's counsel consented to strike out the first sentence and proposed to read the remainder.

Defendant's counsel objected.

The court permitted the answer to be read as proposed, and defendant excepted.

Sixteenth. Is the whole of your answer to the seventh direct interrogatory given from personal knowledge, or is it in whole or in part derived from others, or from books, records, or memoranda written or made by other persons? If the latter, state in detail the sources of your knowledge or information.

To the sixteenth cross-interrogatory he saith: It is based on personal knowledge.

117 Seventeenth. Is the whole of your answer to the tenth direct interrogatory given from personal knowledge, or is it in whole or in part derived from others, or from books, records, or memoranda written or made by other persons? If the latter, state in detail the sources of your knowledge and information.

To the seventeenth cross-interrogatory he saith: It is given from personal knowledge.

Eighteenth. Have you personal knowledge of the marks on the iron thus sold from the Pershytte furnace to N. M. Höglund's Sons & Company, and of the time and manner of shipment of the iron, or do you obtain your information from memoranda or entries thereof, or from other persons? If so, who informed you, and who made the entries and memoranda? Did you personally examine or deliver or ship the iron thus sold to N. M. Höglund's Sons & Company?

To the eighteenth cross-interrogatory he saith: I know personally that the 12,000 centners were marked with the usual mark of Pershyttan, G. P. H. (signifying Gamla (old) Pershyttan), and

118 that the iron was sent during the winter of 1880 from Pershyttan to Nova. Further does not my personal knowledge go.

Nineteenth. Did the owners or operators of the Pershytte furnace employ a professional chemist to analyze the ores used and the iron manufactured in the furnace in 1879 and 1880? If so, what was his name?

To the nineteenth cross-interrogatory he saith: The question is already answered by my reply to the eighth cross-interrogatory.

Twentieth. Did you ever make an analysis of the iron, or any portion of it, manufactured in the Pershytte furnace or in any other furnace at which you were employed in the latter part of 1878 or the early part of 1879, and referred to in the eleventh and twelfth direct interrogatories? If so, when, where, and by what method or process? State the same in full and in detail and the result of your analyses.

To the twentieth cross-interrogatory he saith: No.

Twenty-first. If you testify that you have made analyses of any ore used or iron manufactured at the Pershytte furnace, or

119 at any other furnace, state whether you made duplicate analyses in each cases and the result thereof.

To the twenty-first cross-interrogatory he saith: I have not made any analysis.

Twenty-second. Is the whole of your answer to the thirteenth direct interrogatory given from personal knowledge or is it in whole or in part derived from others, or from books, records, or memoranda written or made by other persons? If the latter, state in detail the sources of your knowledge.

To the twenty-second cross-interrogatory he saith: I have answered in my reply to third cross-interrogatory.

Twenty-third. Did you personally make the practical tests referred to in your answer to the fourteenth direct interrogatory? If not, by

whom were they made, giving the names of the persons, and how do you get your information?

To the twenty-third [cross]-interrogatory he saith: My reply to the eleventh direct interrogatory is my answer.

120 Twenty-fourth. If you personally made or applied such practical tests, state the nature and method thereof in detail and the results obtained.

To the twenty-fourth cross-interrogatory he saith: I made no practical tests.

Twenty-fifth. If you state in answer to the direct interrogatories that you have read the deposition of Bernhard Fernguist, attached to this commission, you will also please state whether the same method of analysis described as followed by him in making this analysis of the iron received from the Pershytte furnace is still followed in Sweden in all its details; and, if not, wherein the method now pursued is different from his course of procedure in that instance.

To the twenty-fifth cross-interrogatory he saith: I have not read the testimony of Bernhard Fernguist.

Twenty-sixth. Do you still pursue, as a professional or practical chemist, the same method of analysis in all its details that you followed in 1878, 1879, and 1880 in analyzing iron? If not, state in detail wherein your present method differs from that followed by Bernhard Fernguist in 1877 or 1878, as described in his depo-

121 sition, and your reason for the change.

To the twenty-sixth cross-interrogatory he saith: I am not a professional chemist.

Defendant's counsel renewed his objection, on the same grounds, to that part of the deposition already read, where the court permitted the witness to testify as to the analysis of Fernguist, the witness now stating in answer to the twenty-sixth cross-interrogatory that he is not a professional chemist.

The court adhered to the ruling already made, and defendant excepted.

Twenty-seventh. Did you read or hear read these cross-interrogatories, or any of them, before answering the direct interrogatories?

To the twenty-seventh cross-interrogatory he saith: I have read both the direct interrogatories and the cross-interrogatories before answering either.

Twenty-eight. Did you read or hear read any of the depositions of other witnesses examined under this commission, or were you present at the examination of such witnesses before giving your evidence? If so, state which of such depositions or witnesses.

122 To the twenty-eighth cross-interrogatory he saith: I have neither read or heard read any of the depositions of the other witnesses, nor was I present at the examination.

Twenty-ninth. If you know of any other matter or thing material to the issues and favorable to the defendant state the same as fully as if you were especially interrogated in relation thereto.

To the twenty-ninth cross-interrogatory he saith: My opinion is that the 12,000 centner- Pershytte pig-iron is an article of most ex-

cellent quality. In mercantile respect I have no right to say anything, nor can I do so, as I have no knowledge of either the price or of other conditions.

Defendant's counsel objected to the answer as not responsive and as incompetent and immaterial, and declined to read it.

Plaintiff's counsel proposed to read the portion of the answer as follows: "My opinion * * * is * * * the 12,000 centners Pershytte pig-iron is an article of most excellent quality."

Objected to by defendant as hearsay and as opinion and incompetent, and not responsive to the cross-interrogatory.

Allowed. Defendant excepted.

123 Plaintiff's counsel read in evidence the deposition of A. E. CASSEL, a witness examined under commission on behalf of the plaintiff, as follows:

First. What is your name, age, and occupation?

To the first interrogatory he saith: My name is A. E. Cassel; 25 years of age, and manager of Svana Iron Works.

Second. How long have you been in that occupation; what experience have you had in it, and what was your occupation prior thereto?

To the second interrogatory he saith: Since April, 1880, and before that I have from November, 1878, been assistant to my father, who, before me, was manager of the said iron works. I passed a mining school before being assistant.

Third. By what firm or person were you employed in 1879 and 1880?

To the third interrogatory he saith: Svana Iron Works.

Fourth. How long have you been employed by them, and in what capacity?

To the fourth interrogatory he saith: From November, 1878, to April, 1880, I was assistant to the manager; from April, 1880, I have been manager.

124 Fifth. Do you remember a parcel or parcels of 7,200 hundred-weight grey Nordansjo and Nyhytte pig-iron, marked S B V E and N B B B K, which was sold in 1880? If so, when was it sold, and by whom and to whom?

To the fifth interrogatory he said: Yes. It was sold, I think, in the month of February, 1880, by my father to N. M. Höglund's Sons & Co.

Sixth. At what furnace or furnaces was it made?

To the sixth interrogatory he saith: At Nordansjo and Nyhyttan.

Seventh. In what manner was the inspection of its manufacture at the furnace or furnaces where it was made conducted?

To the seventh interrogatory he saith: In the same manner as during the preceding years, with the greatest care and attention.

Defendant's counsel objected to this answer as hearsay and as immaterial. Objection overruled. Defendant excepted.

Eighth. How did the manner of said inspection compare with the

manner in which the manufacture of pig-iron at such furnace or furnaces had been conducted prior thereto?

125 To the eighth interrogatory he saith: The manner was exactly the same.

The same objection, ruling, and exception *was* taken by defendant to the answer to this question.

Ninth. State what your means of knowledge are in regard to the percentage of phosphorus, sulphur, and silicon in the iron so as aforesaid sold and shipped to N. M. Höglund's Sons & Company, if you say any was sold and shipped.

To the ninth interrogatory he saith: From previous analysis of the iron we manufacture.

Tenth. What was the percentage of phosphorus, sulphur, and silicon contained in the iron so as aforesaid sold and shipped to N. M. Hoglund's Sons & Company, if you say any was sold and shipped?

To the tenth interrogatory he saith: In the pig-iron we made the percentage of phosphorus is about 0.02 %, of sulphur 0.02 %, and silicon is more varying, but it used to be about 1 per cent., and I think that the pig-iron in question contained about these quantities.

Defendant objected to this answer as opinion and hearsay. Objection overruled. Defendant excepted.

126 Eleventh. State whether or not you know of any iron other than that sold as aforesaid to N. M. Hoglund's Sons & Company made at the furnace at which you were employed in or about the latter part of 1878 or the early part of 1879?

To the eleventh interrogatory he saith: I think that some other iron was made in the same furnace, but I do not recollect for certain.

Sixteenth. State whether you remember two parcels of pig iron of 4,800 hundred-weight each with the same marks as those mentioned in the fifth interrogatory shipped in October and November, 1879, to America. To whom and on what vessel were they shipped?

To the sixteenth interrogatory he saith: Yes; I recollect. They were sent by rail to N. M. Hoglund's Sons & Co. in Stockholm.

Defendant objected to the answer as immaterial and hearsay. Objection overruled. Defendant excepted.

Eighteenth. State whether any account of the quality of ores used at the said furnace or furnaces in the manufacture of pig-iron is kept from year to year.

127 To the eighteenth interrogatory he saith: Complete journal is kept of how much of each kind of ore is used for each day.

Nineteenth. State whether this quality has changed materially during several years past, and, if so, how.

To the nineteenth interrogatory he saith: The quality of the ores has not changed materially during the last five years. Of the state of things before that time I have no knowledge.

Defendant objected to this answer as hearsay and opinion. Objection overruled. Defendant excepted.

Defendant's counsel reads the cross-interrogatories and answers as follows:

First. Were you present at the time of the negotiation and sale of the pig-iron referred to in the fifth direct interrogatory, or is your knowledge, in whole or in part, derived from others, or from letters, entries, and memoranda written or made by other persons? If the latter, state the extent and source of your information.

To the first cross-interrogatory he saith: I saw a telegram to my father from N. H. Hoglund's Sons & Co. about the sale of the 7,200 centners pig-iron.

128 Second. Who made or conducted the inspection of the manufacture of the pig-iron referred to in the seventh and eight- direct interrogatories? Were you present at such inspection throughout? If not, how do you derive your knowledge or information thereof?

To the second cross-interrogatory he saith: The furnace master, A. E. Persson, had the inspection of the manufacture, and I visited the furnace from time to time.

Fifth. If you have personal knowledge, name all the different ores used at said furnace or furnaces in the manufacture of iron during those years and the difference in the quality and character thereof.

To the fifth cross-interrogatory he saith: The ore from "Bondegrufva" mine, which requires much limestone, is used to about 52% in the mixture, and "Blandston" (ore from "Klackberg"), requiring silicon for melting, is used to about 23%. Ore from "Kallmore," which is what is called "one-going"—that is, it melts without being mixed with anything else—is used to about 15%, and to the whole is added about 10% limestone.

129 Sixth. Were any of the ores used in the manufacture of iron at said furnace or furnaces, and referred to in your answers to the direct interrogatories, analyzed, to your personal knowledge? If so, state which of the ores, or what portion thereof, when, where, and by whom and by what methods, and how you obtained your information.

To the sixth cross-interrogatory he saith: Analyses have before been made from time to time at the mining school in Stockholm, but I do not recollect if the ores used for the manufacture of the 7,200 centners now in question were analyzed or not.

Eleventh. Is the whole of your answers to the sixteenth and seventeenth direct interrogatories or is your answer to either one of them given from personal knowledge, or is either of such answers in whole or in part given from information derived from others or from books, records, or memoranda written or made by other persons? If the latter, state in detail the extent and sources of your knowledge or information.

130 To the eleventh cross-interrogatory he saith: I answered from personal knowledge.

Twelfth. Have you personal knowledge of the sale and shipment of the pig-iron referred to in the 13th direct interrogatory, and of the percentage of silicon, sulphur, and phosphorus contained therein, or do you obtain your information from memoranda or entries thereof, or from other persons? If so, who informed you, and who made the entries or memoranda? Did you personally negotiate the sale, or were you present at the sale, or did you personally deliver or ship the iron thus sold?

To the twelfth cross-interrogatory he saith: The qualities of the iron I do not recollect, but, concerning the sale, I saw a telegram asking for it.

Thirteenth. Have you personal knowledge of the sale and shipment of the iron referred to in the sixteenth direct interrogatory and of the amounts of phosphorus, sulphur, and silicon contained therein, or do you obtain your information from memoranda or entries thereof, or from other persons? If so, who informed you, and who made the entries or memoranda? Did you personally
131 negotiate the sale, or were you present at the sale, or did you personally deliver or ship the iron thus sold?

To the thirteenth cross-interrogatory he saith: I have knowledge of the sale of the iron mentioned in the sixteenth direct interrogatory from memoranda, which I do not recollect if I or my father made. I did not personally negotiate the sale, nor was I personally present.

Fifteenth. If you personally made or applied such practical tests, state the nature thereof and the method pursued in detail and the results obtained, and especially the percentage of silicon and phosphorus contained therein.

To the fifteenth cross-interrogatory he saith: I do not recollect that any practical tests were made.

Sixteenth. Did you personally keep the account of the quality of the ores used at the said furnace, in the manufacture of iron, from year to year? If not, who did keep such account and make the entries in the record thereof?

To the sixteenth cross-interrogatory he saith: The book-
132 keeper at Nordansjo kept the account of the quality of the ores used.

Seventeenth. If you kept the account, from whom did you get the information this entered? Did you have personal knowledge of the correctness of such information, or did you rely on your informants?

To the seventeenth cross-interrogatory he saith: I did not keep the account.

Eighteenth. If you give any evidence on this subject attach a correct copy or transcript of such account to your deposition.

To the eighteenth cross-interrogatory he saith: I have no copy to give, as will be seen from the preceding answers.

Nineteenth. Did you read or have read these cross-interrogatories, or any of them, before answering the direct interrogatories?

To the nineteenth cross-interrogatory he saith: Yes; I did.

Twentieth. Did you read or hear read any of the depositions of

other witnesses examined under this commission, or were you present at the examination of such witnesses before giving your evidence? If so, state which of such depositions or witnesses.

To the twentieth cross-interrogatory he saith: No, I was not present at the examination nor have I read or heard read the depositions of other witnesses.

133 Plaintiff's counsel read in evidence the deposition of J. Johansen, a witnesses examined under commission on behalf of plaintiff, as follows:

First. What is your name, age, and occupation?

To the first interrogatory he saith: J. Johansen; 42 years of age, and manger of iron works.

Second. How long have you been in that occupation, what experience have you had in it, and what was your occupation prior thereto?

To the second interrogatory he saith: Since 1876 I have passed through a mining school, and been six years before manager of other iron works.

Third. By what firm or person were you employed in 1879 and 1880?

To the third interrogatory he saith: Svana Iron Works.

Fourth. How long have you been employed by them, and in what capacity?

To the fourth interrogatory he saith: Since 1878, when the iron works with which I was engaged were purchased by a stock company, called Svana Iron Works.

Fifth. Do you remember a parcel or parcels of 7,200 hundredweight grey Nordansjo and Nyhytte pig-iron, marked S B V E and N B B B K, which was sold in 1880? if so, when was it sold, and by whom, and to whom?

134 To the fifth interrogatory he saith: I recollect that a parcel of grey pig-iron was sold to N. M. Hoglund's Sons & Co. in Stockholm, but the quantity I do not recollect. I had nothing to do with the sale.

Sixth. At what furnace or furnaces was it made?

To the sixth interrogatory he saith: Nordansjo and Nyhyttan high furnaces.

Seventh. In what manner was the inspection of its manufacture at the furnace or furnaces where it was made conducted?

To the seventh interrogatory he saith: I and a furnace master inspect the same.

Eighth. How did the manner of said inspection compare with the manner in which the manufacture of pig-iron at such furnace or furnaces had been conducted prior thereto?

To the eighth interrogatory he saith: The inspection has been exactly the same both before and afterwards.

Ninth. State what your means of knowledge are in regard to the percentage of phosphorus, sulphur, and silicon in the iron so as aforesaid sold and shipped to N. M. Hoglund's Sons & Company, if you say any was sold and shipped.

135 To the ninth interrogatory he saith: Through analysis on the ore and on the pig-iron and through special test of sulphur in the pig-iron, but I do not think that any special analysis was made on the pig-iron sold to N. M. Hoglund's Sons & Co., and I do not recollect if test of sulphur was made. I know, however, that analysis was made on a parcel of pig-iron made of exactly the same materials.

Tenth. What was the percentage of phosphorus, sulphur, and silicon contained in the iron so as aforesaid sold and shipped to N. M. Hoglund's Sons & Company, if you say any was sold and shipped?

To the tenth interrogatory he saith: In the last-mentioned parcel the sulphur was 0.02 %.

Eleventh. State whether or not you know of any iron other than that sold, as aforesaid, to N. M. Höglund's Sons & Company, made at the furnace at which you were employed, in or about the latter part of 1878 or the early part of 1879.

To the eleventh interrogatory he saith: Much more was made.

Twelfth. If you answer the eleventh interrogatory in the affirmative state what you know of the character and quality of such
136 other iron?

To the twelfth interrogatory he saith: As nearly similar as possible, the difference being difference in hardness.

Defendant's counsel objected to this answer on the ground that the witness has no knowledge of his own, and his answer is opinion and hearsay. Objection overruled. Defendant excepted.

Twentieth. If you know of any other matter or thing material to the issues and favorable to the plaintiff state the same as fully as if you were especially interrogated in relation thereto.

To the twentieth interrogatory he saith: The parcel bought by N. M. Hoglund's Sons & Company cannot be different from the pig-iron we make, as, for many years, materials of similar quality have been used.

Defendant objected to this answer as opinion and hearsay and as incompetent. Objection overruled. Defendant excepted.

Defendant's counsel read the cross-interrogatories and answers as follows:

2. Who made or conducted the inspection of the manufacture of the pig-iron referred to in the seventh and eight- direct inter-
137 rogatories? Were you present at such inspection throughout? If not, how do you derive your knowledge or information thereof?

To the second cross-interrogatory he saith: I and Mr. Pehisson had the inspection. I was not present the whole time, but I heard from Mr. Pehisson that everything was right.

4. If you have any personal knowledge, name all of the different kinds and qualities of iron manufactured at the Pershytte furnace and any other furnace at which you were employed in 1878, 1879, and 1880.

To the fourth cross-interrogatory he saith: At Nordansjo and Nyhytte high furnaces were made grey, grey with white margins, half white, and white pig-iron during 1878, 1879, and 1880.

5. If you have personal knowledge, name all the different ores used at said furnace or furnaces in the manufacture of iron during those years, and the difference in the quality and character thereof.

To the fifth cross-interrogatory he saith: We use quartzose, calcareous, and self-fluxing ores; the last *one* are such ores that melt without any additional flux.

19. Did you read or hear read these cross-interrogatories, or any of them, before answering the direct interrogatories?

To the nineteenth cross-interrogatory he saith: I read them.

138 Plaintiff's counsel read in evidence the deposition of Otto Magnus Höglund, a witness examined under commission on behalf of plaintiff, as follows:

Otto Magnus Höglund, of Stockholm, merchant, 36 years of age and upwards, being duly and publicly sworn, pursuant to the directions hereto annexed, and examined on the part of the plaintiff, doth depose and say as follows:

Direct interrogatories:

First. What is your name, age, residence, and occupation?

To the first interrogatory he saith: My name is Otto Magnus Hoglund; 36 years of age; residing at Stockholm; and my occupation is merchant.

Second. How long have you been in that occupation and where?

To the second interrogatory he saith: The present firm, in which I am a partner, was established the 14th of January, 1879, but before that time I was engaged in the firm of N. M. Höglund from 1873. My present firm is a successor to N. M. Hoglund.

Third. To what firm, if any, do you belong?

To the third interrogatory he saith: To N. M. Hoglund's Sons & Co.

139 Fourth. Do you know of any lots of Swedish pig-iron shipped by N. M. Hoglund's Sons & Company to the port of New York by the steamer "Kepler" in the early part of 1880; if so, from whom were they respectively bought; what were the marks upon them; what did they weigh; when did the "Kepler" sail, and to whom were they consigned?

To the fourth interrogatory he saith: According to copies of bills of lading in our possession, the following parcels of pig-iron were shipped by the steamer "Kepler," viz: 7,200 centner-, marked S B V E and N B B B K, and 12,000 centner-, marked G P H. The first of these lots was bought from the late Mr. P. A. Cassel, then managing director of the Svana company, the second from Mr. Gustaf Gredin, of Nova, through Mr. M. J. Neyber as broker. The marks and weight were as above. The Kepler left Stockholm May 18, 1880; the above parcels of pig-iron were consigned to Mr. Gustaf Lundberg.

Defendant objected to the answer as hearsay. Objection overruled for the present. Defendant excepted.

140 Fifth. What experience, if any, have you had as to the analyses, if any, according to which Swedish pig-iron was commonly sold in 1880?

To the fifth interrogatory he saith: It was not, and is not even now, the custom to sell Swedish pig-iron with a certain analysis guaranteed. The sale to the Albany and Rensselaer Iron and Steel Co., in which an analysis was guaranteed, was quite an exception.

Defendant's counsel read the cross-interrogatories and answers, as follows:

1. Were N. M. Hoglund's Sons & Company the owners of the iron referred to in your answers to the direct interrogatories as shipped on the steamer Kepler or any other vessel to the port of New York in the early part of 1880?

To the first cross-interrogatory he saith: Yes.

2. Was Gustaf Lundberg, the plaintiff in this action, the agent of N. M. Hoglund's Sons & Company, in the early part of 1880, for the sale of iron in the United States?

To the second cross-interrogatory he saith: Yes.

3. Did Gustaf Lundberg report to N. M. Hoglund's Sons &
141 Company, as such agent, the alleged contracts of sale to the defendant of the iron referred to in the complaint in this action, and was such iron shipped to the port of New York by N. M. Hoglund's Sons & Company from Sweden in pursuance thereof?

To the third cross-interrogatory he saith: Yes; the sales were cabled to us as soon as concluded and the contracts sent to us as soon as signed. The iron was shipped expressly to fulfil these contracts.

4. Did N. M. Hoglund's Sons & Company analyze, or cause to be analyzed, any of the iron thus shipped to the port of New York? If so, who made such analysis, and when and where, of which parcels of iron, and by what process or method, if you have personal knowledge. And also state the result of such analysis.

To the fourth cross-interrogatory he saith: We did not analyze, nor cause to be analyzed, samples of the parcels of pig-iron shipped by the Kepler.

5. When, where, and of whom did N. M. Hoglund's Sons & Company purchase the said iron? Was the negotiation therefor conducted orally, or in writing, by letter, telegraph, or otherwise?
142 If in writing, attach a correct copy of the contract or contracts, or the letters, telegrams, or writings containing the terms of such purchase or purchases. If there were no writings or memoranda of the terms of purchase, then state the price or prices which you agreed to pay for such iron.

To the fifth cross-interrogatory he saith: We bought the 12,000 centers, G P H, on January 20th, 1880. The transaction was conducted in Stockholm through Mr. M. J. Neyber, as broker, and the seller was Mr. Gustaf Gredin, of Nova. The negotiation went through

the said broker, who, I believe, corresponded with the seller. A translation of the contract is annexed, marked F. The second parcel was bought from Mr. P. A. Cassel, then managing director of the Svana company. Translation of extracts of the correspondence between ourselves and Mr. Cassel is annexed, from which the date of the purchase, &c., can be seen. It is marked G.

6. Was such iron purchased on credit, and, if so, state the terms of credit; or was it paid for at the time of purchase?

To the sixth cross-interrogatory he saith: The G P H
143 should be paid by our acceptance for half the amounts, 3 months from the 15th of February, and for the other half 3 months from the 15th of March, 1880. For the S B V E and N B B K pig-iron no terms of payment were agreed upon, and, consequently, the usage of payment, 30 days after signature of bill of lading, was observed.

7. If you state that the iron was purchased on credit state whether N. M. Hoglund's Sons & Company have since paid therefor, and, if so, when. Did N. M. Hoglund's Sons & Company pay in full the original contract price, or was there any deduction made therefrom, and, if so, how much?

To the seventh cross-interrogatory he saith: The G P H iron was paid by our acceptance 2 months from March 15th, 1880, for half the amount, and 3 months from the same date for the other half, which acceptances were duly honored when falling due. The S B V E and N B B B K was credited to the Svana company in account current on June 15th, or one month after the date of bill of lading. The original contract prices were paid in full and no deduction whatever was made therefrom.

144 8. Is the whole of your answer to the fourth direct interrogatory given from personal knowledge, or is it in whole or in part derived from others or from books, records, or memoranda written or made by other persons? If the latter, state in detail the sources of your knowledge or information.

To the eighth cross-interrogatory he saith: My reply is derived from the bills of lading of the iron in question, from the correspondence between Mr. P. A. Cassell and our firm, whereby the sale was concluded, and from the contract made through Mr. Neyber between our firm and Mr. Gredin.

9. Did you ever see or examine in person any of this iron in question; if yea, when, where, and what portion of it?

To the ninth cross-interroogatory he saith: No.

10. Did you read or hear read these cross-interrogatories, or any of them, before answering the direct interrogatories?

To the tenth cross-interrogatory he saith: No.

11. Did you read or hear read any of the depositions of other witnesses examined under this commission, or were you pres-
145 ent at the examination of such witnesses before giving your evidence? If so, state which of such depositions or witnesses.

To the eleventh cross-interrogatory he saith: No.

12. If you know of any other matter or thing material to the

issues and favorable to the defendant state the same as fully as if you were specially interrogated in relation thereto.

To the twelth cross-interrogatory he saith he knoweth not.

Plaintiff's counsel read in evidence the deposition of Hjahlmar Horngren, a witness examined under commission on behalf of plaintiff.

The witness gave evidence tending to show that he was a partner in the firm of N. M. Hoglund'- Sons & Co.; that the iron described in the contracts, of which copies are annexed to the complaint, were shipped by that firm, by the steamer Kepler, in May, 1880, to the port of New York from the port of Stockholm, in Sweden; that the steamer sailed from Stockholm on or about May 18th, 1880, and that the price and other particulars of the pur-
146 chase made by that firm appeared in the correspondence and other papers relating to the sale produced by him and put in evidence, and that the contract price for that iron was paid in full without any deduction.

All of the foregoing depositions read in evidence were opened by consent of the respective parties at least one month prior to the commencement of the trial.

Arthur H. Elliot, being duly sworn and examined as a witness for the plaintiff, testifies that he was an analytical chemist, and had been for fifteen years, and had frequently made analyses of iron for the determination of phosphorus and other substances. He then gave evidence tending to show that he had made the analyses stated in the annexed table, Exhibit 13, to which his name is appended, with the results therein stated. He explained the method he had pursued in making these analyses and identified the differ-
147 ent samples of iron from which they were made, and he gave his reasons for adopting the method of analysis pursued by him. He also testified in regard to the advantages of the method of analysis called the "Eggertz" method, and referred to in the testimony of the Swedish witness, Bernhard Ferguist.

He further gave evidence tending to show that he went to Troy at the request of Dr. Chandler to confer with Dr. Wendell, the defendant's chemist, and he gave evidence tending to show that he made an analysis, with the approval of said chemist, from a sample furnished by him, of the iron in question of the brand S B V E, and according to the method prescribed and adopted by him, with the following results, viz: 45 thousandths of one per cent. of phosphorus.

He further gave his reasons for thinking that the process was defective and that it would indicate a percentage of phosphorus in excess of the true proportion contained in the iron analyzed.

He further testified as follows:

By the COURT:

148 Q. Did you make a test for sulphur?

A. They did not press that at all, and it was only this phosphorus question that they pressed.

By PLAINTIFF'S COUNSEL:

Q. I would like to call your attention to a statement from the Chemical News, 30th volume, 8th page, and to an article by Sergius Kerns, of St. Petersburgh, on phosphorus and sulphur in bars and pigs of iron. Will you look at the article, and state whether, in your judgment, that correctly states the scientific fact?

A. I should think that the iron would be very likely to vary that much.

Q. That would be your judgment as to the distribution of phosphorus in different portions of the same bar?

A. Yes, sir.

Q. I observed that in your testimony as to the results of the different analyses you yourself found a variation in the same pig as between the first and the second series of specimens.

A. Yes, sir.

Plaintiff's counsel reads in evidence the portion of the article above referred to, as follows:

149 "It is a well-known fact that sulphur and phosphorus are diffused very unequally in iron, and also in steel. The author had an opportunity of analyzing a piece of square iron (1 x 1) for sulphur and phosphorus, taking shearings from this bar in different places, which, for this purpose, was divided through its length into seven equal parts. The length of the bar was 44 inches. The following results of the analyses of these shearings may be of some interest:

	Sulphur per cent.	Phosphorus per cent.
1	0.041	0.031
2	0.042	0.025
3	0.060	0.045
4	0.055	0.026
5	0.059	0.034
6	0.042	0.037
7	0.036	0.025

"The sulphur was estimated as Carium sulphate and the phosphorus by the method of Eggertz."

James B. Mackintosh, being duly sworn and examined as a witness for the plaintiff, testified that he was an analytical
150 chemist, and had followed that profession for about five years, and had frequently made analyses of iron for the determination of phosphorus and other substances. He gave evidence tending to show that he had made the analyses stated in the table, Exhibit 13, to which his name is appended, with the results therein stated, and explained the method pursued by him and his reasons for it, and also gave evidence tending to identify the samples from which such analyses were made and the source from which the same proceeded.

Gustaf Lundberg, the plaintiff, being duly sworn and examined as a witness on his own behalf, testified:

By Mr. WHEELER:

Q. What is your business?
A. I am agent for a Swedish iron house.
Q. Where is your place of business?
A. Boston.
Q. Of what country are you a native?
A. Sweden.
Q. Have you ever been naturalized as an American citizen?
A. No, sir.

151 Q. Have you ever had any business with the defendant?
A. Not until this contract.

Q. Look at these three pigs of iron that are now produced in court marked G P H, S B V E, and N b b B K, and state what lot of iron they belong to.

A. They belong to a lot of iron delivered to the Albany & Rensselaer Iron and Steel Company in early July, 1880.

Q. And when was the sale of iron made to them?
A. In February of the same year.
Q. State whether or not at *any* time of the sale any of that iron was in this country.
A. No; there was not, to my knowledge.
Q. Do you know whether at the time you made the contract with them which is in evidence the iron had been manufactured?
A. I didn't know of it.
Q. State when you commenced your present business of dealing in these particular brands of iron.
A. In the fall of 1879.
Q. How long have you been in the iron business?
A. Since 1871 in America and three years previous in Sweden.

152 Q. When you commenced dealing in these particular brands of iron, in the fall of 1879, as you have testified, state whether or not they were well-known brands of Swedish grey iron.

A. There were.

Q. Did you at about the same time that you made these sales of this iron to the defendant make other sales to other parties of the same brands of iron?
A. Yes; at the same time and previous also.
Q. And were there any other lots of this iron that came over on the Kepler besides the two lots that were imported by defendant?
A. There was another lot of the same brands.
Q. How large was that other lot?
A. Three hundred tons.
Q. Who was that sold to?
A. Howe & Co., of Pittsburg.
Q. When did you receive the analysis in reference to which this iron was sold to the defendant?
A. I don't recollect the exact date, but in the fall of 1879, I think.

Q. And that analysis you communicated to the defendant about the sixth of February?

A. Yes, sir.

Q. Look at the letter which I now show you and state whether that is the letter.

A. Yes, sir; that is the letter.

153 (The letter and analysis attached are read in evidence by plaintiff's counsel and marked Plaintiff's Exhibit No. 7 as follows:)

Gustaf Lundberg, agent for N. M. Hoglund's Sons & Co., Stockholm.

38 KILBY STREET, BOSTON, *Feb.* 6, 1880.

Albany & Renssaeler Iron & Steel Co., Troy, N. Y.

DEAR SIR: I have your favor of 5th inst. In reply would say that of the sample mentioned, I have only 5 tons in Boston.

For shipment from Sweden next May, I have for sale:

500 tons NB G P H Swedish charcoal grey pig-iron, as per analysis herewith, at $48 per ton on wharf N. Y., duty paid, 30 days.

500 to 800 tons S B V E & $^{NB\ B}$ B K Swedish charcoal grey pig-iron, at $46, same terms (this lot subject immediate cable confirmation.) Hoping the above quotations may be satisfactory, I await your reply, & remain,

Very resp'f'y, GUSTAF LUNDBERG.

154 *Analysis:*

S B V E & $^{NB\ B}$ B K

Carbon	.5
Graphite	3.7
Silicon	.75
Phosph	.024
Sulphur	.02
Manganese	.684

NB G P H.

Phosph	.03
Sulphur	Trace
Silicon	.90

Q. Were these prices which are mentioned in the contracts of sale the market prices for this iron at the time of the sale?

Objected to as immaterial. Objection sustained.

Q. Was this other lot of iron that came over on the Kepler of the same brands as these?

A. Not of all three, only of two.

Q. Which two?

A. N b b B K and S B V E.

Q. And that indicates the place of manufacture and the quality?

A. That is the stamp for the furnace.

Q. State whether or not the other lot than S B V E and N b b B K that came on the "Kepler" was sold with reference to the

155 same analysis as the lots included in the contract in suit.

(Objected to as incompetent and immaterial.)

Mr. WHEELER: That of itself is immaterial unless followed up; but I propose to follow it up by proving that it was delivered to the purchasers and that no complaints were received from them in regard to the quality of the iron.

(Objection sustained.)

Q. This iron arrived here, as you said, and was delivered, and we have got in evidence the letter in which the defendant declined to take it, and we have also in evidence the letter that you sent to them, notifying them of your intention on that account to resell the iron. Did you, after having written them of your intention to resell the iron included in the two contracts in suit, proceed to sell it?

A. Yes, sir.

Q. Now state what means you employed to effect such sale, and whether or not the prices that you obtained were the fair market prices at the time you made the sales.

156 Mr. COUNTRYMAN: I object. These contracts were made February 10 and February 11, 1880, and the iron arrived here early in June of the same year, and was taken to Troy, and there analyzed, and the discovery made, as we claim, that it did not conform to the warranty attached to the contracts. Mr. Lundberg (whether as agent or as principal is immaterial) was notified immediately by Mr. Marvin, on behalf of the defendant, that the iron was not in accordance with the contracts nor with the analyses; and as early as July he was notified that the defendant would not take the iron on that account, and he was inquired of what should be done with it. This notice read in evidence that the plaintiff should resell the iron, was dated on the 4th day of December of the same year; in other words, from five to six months after the plaintiff was notified by Mr. Marvin that the defendant refused to accept this iron under the contract.

Then after this notice was given on the 4th of December, and along about the first of February, 1881, the plaintiff commenced making resales, giving orders on the defendant for this iron

157 to other purchasers, and that was continued along till late in July, 1881, when it was completed.

Now, the point is this, that the plaintiff was bound to determine at once what stand he would take—certainly within a very short time after being notified by the defendants that they refused to accept the iron under the contracts. He was bound to either leave the iron with the defendants and let it take the risk, and bring his action for the purchase price, or he should have notified them at once that he would take the iron, resell it, and hold them for whatever balance was found to be due between the resales and the amount of the contract price, taking his chances of being able to sustain the claim that the iron was not in accordance with the contracts.

The COURT: How do you say you were injured by the course the plaintiff took?

Mr. COUNTRYMAN: I do not know and I do not care whether the price went down or up in the meantime. The point is that the plaintiff was bound to act at once.

The COURT: If you show no injury, do you still say that
158 the plaintiff was bound to act at once.

Mr. COUNTRYMAN: I have not inquired whether there was any difference in the market price during this period. I do not think it is at all material. Our contention is that the plaintiff was bound to put the iron upon the market at once.

Mr. WHEELER: The final refusal, if your honor please, was not until the 16th of November, and our notice to resell was on the 4th of December thereafter.

Objection overruled. Defendant excepted.

A. The iron was offered in the regular way—by correspondence and by travelling—to my regular customers, and high prices had been asked, but were refused, and it could not be so at that time, and so I considered that the prices that were obtainable were market prices.

Mr. COUNTRYMAN: I object to the witness stating his conclusions. He should state the facts.

Q. State whether or not the prices you actually got were the best prices that you were able to obtain for the iron.

A. They were.

Q. Look at the memorandum which I now show you, and state whether or not that is a correct statement of dates of sales
159 and of the amounts sold of each of the lots included in the contract.

A. Yes, sir; they are copies from my books.

(The paper is read in evidence and marked Plaintiff's Exhibit No. 8, as follows:)

PLAINTIFF'S EXHIBIT No. 8.

Memo. Showing Brands on Sales Made for Ac. [of] The Albany & Rensselaer Iron & Steel Co., as per Ac. Rendered.

			G P H	S B V E & N B B B K
March	21.	Park Bros. & Co.	5 0 0 0	
"	26.	Lobdell Carr-Wheel Co.	4 0 0 0	6 0 0 0
May	16.	Baltimore Carr-Wheel Co.	9 19 3 23	
July	25.	A. Whitney & Sons	1 0 0 20	1 19 3 8
Aug.	4.	Singer, Winnick & Co.	100 0 0 0	
"	6.	Carr & Crowley	3 19 3 18	5 19 3 8
"	24.	Hussey & Howe & Co., L'd	376 2 3 2	3 2 0 6
Oct.	3.	Lobdell Car-Wheel Co.	----------	293 12 3 12
			500 2 3 7	310 14 2 6
				810 17 1 13
Aug.	16.	Albany & Renss. I. & S. Co., short delivery, assorted brands	----------	19 7 0 15
				830 4 2 0

160 Q. Look at the paper now shown you, and state whether that contains a correct statement of the prices and amounts realized for each particular lot sold.

A. Yes, sir.

(The paper is read in evidence and marked Plaintiff's Exhibit No. 9, as follows:)

Memo. Showing Brands on Sales Made for Ac. [of] The Albany & Rensselaer Iron & Steel Co., as per Ac. Rendered.

1881.										
Mar. 21.	By sale to	Park Bros. & Co., Pittsburgh, Pa.	5	0	0	0	C'	37	Del.	185.00
" 26.	"	" Lobdell Car-Wheel Co., Wilmington, Del.	10	0	0	0	"	36	"	360.00
May 16.	"	Baltimore Car-Wheel Co., Baltimore	9	19	3	23	"	37	"	369.92
July 25.	"	A. Whitney & Son, Phila.	3	0	0	0	"	34	"	102.00
Aug. 4.	"	Singer, Winnick & Co., Pittsburgh	100	0	0	0	"	33	"	3,300.00
" 6.	"	Carr & Crowley, Phila.	9	19	2	26	"	34	"	339.54
" 16.	"	Alb. & Renss. I. & S. Co., Troy	19	7	0	15	"	48	Dp.	*929.12
" 24.	"	Hussey, Howe & Co., Pittsburgh	379	4	3	8	"	33	Del.	12,415.96
Oct. 3.	"	Lobdell Car-Wheel Co., Wilmington	293	12	3	12	"	33	"	9,690.21
" "	"	Balance								16,324.97
										44,016.72

*P'd for shortage.

Boston, Oct. 3, 1881.

GUSTAF LUNDBERG.

161 Q. During the period covered by these sales—that is to say between the 21st of March, 1881, and the 3rd of October of the same year—were you making any other sales of the same brands of iron?

A. No; not of those brands.

Q. Were you of other brands of Swedish iron?

A. I am not positive, but I think I did.

Q. Did you yourself, personally, make any endeavors to effect the sale of these lots of iron that the defendant refused?

A. Yes, sir.

Q. What did you personally do in reference to it?

A. I wrote my letters, and then I was out in Pittsburgh and the West trying to sell the iron.

Q. Who did you write to?

A. My usual customers—steel-makers principally and car-wheel makers.

Q. Were they the persons, in your judgment, who would be most likely to require that quality of iron?

A. Yes; they would be the only persons, considering the amount of Swedish pig-iron sold.

Q. There is a letter in evidence dated in August, 1880, in which

the defendant declines to take the iron. Did you, after
162 that, have any negotiations with the defendant on the subject?

A. Yes, sir.

By Mr. COUNTRYMAN:

Q. Were those negotiations in writing or by interviews?

A. Principally by letter.

By Mr. WHEELER:

Q. Look at the letter now shown you and state in whose handwriting it is (a letter dated November 15th).

A. General Marvin's.

Q. He is the treasurer of the defendant, is he not?

A. Secretary and treasurer.

(The letter is read in evidence and marked Plaintiff's Exhibit No. 10), as follows:

TROY, N. Y., *November* 15, '80.

Gustaf Lundberg, Esq., 38 Kilby St., Boston, Mass.

DEAR SIR: Yours 13th inst. rec'd. We were without the information wanted upon which to have replied to you definitely until within a few days. We are now prepared to say we cannot receive the iron upon our contract with you; this we have previously stated, & now beg to reiterate it.

Very truly, SELDEN MARVIN.

163 Q. Between the time of the letter of the 20th of August, which is in evidence, and the time of this letter (Exhibit No. 10), did you have any personal interview with Gen'l Marvin at Troy with reference to the iron?

A. Yes, sir.

Q. When was that?

A. I don't recollect the date; I think it was the latter part of July or early — August—no, I have made a mistake.

Q. Was that interview before the letter of the 20th of August (showing witness letter of the 20th of August)? Does that refresh your recollection?

A. It was after this letter, I think.

Q. Previous to that interview with Gen. Marvin at Troy, had you had any analysis made in Boston of this iron?

A. Yes, sir.

Q. By whom did you have those made?

A. Mr. Sharples.

Q. Where did you obtain the three pigs of iron that you sent to him to be analyzed?

A. There were three pigs remaining there that one of the custom-house officers in New York held for examination, and those
164 three pigs were sent up to him in Boston first, and those were the three first that I sent to Mr. Sharples.

Q. Where did you see those in Boston?

A. I had them in my office, and they were sent over to Mr. Sharples' office.

Q. And what marks, if any, did they have?

A. G P H, and N b b B K, and S B V E; one pig of each mark.

Q. Look at the marks on those three in court and state how they compare with the marks on those you sent to Mr. Sharples.

A. They are the same marks.

Q. Did you communicate the result of Sharples' analyses to the defendant?

A. Yes, sir.

Q. Then, did you afterwards receive from the defendant three other pigs for the purpose of being analyzed?

A. Yes.

Q. To whom did you send them?

A. Also to Sharples.

Q. Where did you see those three pigs in Boston?

A. They were in my office first, and then went over to Sharples—to his office.

Q. Can you state to the jury whether they are the pigs that you delivered to Prof. Sharples, as you have stated?

A. That these pigs are?

Q. Yes.

165 A. Yes, sir.

Q. The identical pigs?

A. Yes, sir.

Q. Do you remember whether these three are pigs that came from the defendant or the three that came from the New York custom-house?

A. I could not say for certain.

Q. But they are either the three that came from the New York custom-house or the three that came from the defendant?

A. Yes.

Q. And in either case they are three that were delivered to Prof. Sharples?

A. Yes, sir.

Q. When did you send these from Boston?

A. These three here?

Q. Yes.

A. Last week.

Q. And in the same box in which they were until we took them out?

A. Yes, sir.

Q. You identify the pigs in the box as being the same that you sent on last week?

A. Yes, sir.

Q. Then, after having received these three sample pigs from the defendant, you saw Gen. Marvin at Troy, as you have testified?

166 A. Yes, sir.

Q. Now state what took place between you and Gen. Marvin at that interview.

A. I don't recollect the conversation, word for word.

Q. Give it in substance.

A. The conversation was that they refused to receive the iron on account of its containing more phosphorus than the contract stipulated, and I suggested that as Dr. Wendell differed so much from the analysis that we had already taken he could name his own chemist in New York, outside of Dr. Wendell, and that I would be willing to stand by the result, and he said, in substance, that he wouldn't admit anybody else'- analysis except his own, and that ended the conversation. Then Dr. Wendell and I went out in the mill and picked out two pigs of each brand and had them drilled and took the borings from two of each brand and mixed them up, and I brought three boxes of those borings to New York to Dr. Chandler.

Q. And those you gave to Dr. Chandler?

A. Yes, sir.

Q. And for what purpose did you so give them to Dr. Chandler?

167 A. To have them analyzed principally for phosphorus.

Q. But to have them analyzed?

A. Yes, sir.

Q. And did you personally at any time deliver to Dr. Chandler, or did you send to him, any other samples of the iron in question than those which you then delivered to him?

A. No

Q. You understood that he got other samples from the defendant?

A. Yes.

Q. But you didn't send them?

A. No, sir.

Q. As to this account, in making these sales of these two lots of iron, state whether or not you incurred any expense, and, if so, what.

Mr. COUNTRYMAN: We make the same objection to any evidence on that subject that we did to any evidence of the resales and on the same grounds, and we object, further, that it now appears that, contrary to the usual custom, he did not, with a view of getting prompt and best sales that could be obtained, hand the iron over to

168 an indifferent broker, but insisted on carrying on the transactions himself on his private account.

(Objection overruled. Defendant excepted.)

A. Yes: there were expenses to New York.

Q. Look at Plaintiff's Exhibit No. 9, and state whether or not [on] the left hand side of the account those expenses are correctly stated.

A. Yes, sir.

Q. State whether or not in making these sales you put this iron for sale in any broker's hands.

A. No.

Q. Why not?

(Objected to by defendant on the ground that the reason [is] incompetent and immaterial. Objection overruled. Defendant excepted.)

A. Not a regular broker, but I have an agent in Philadelphia who

is sort of sub-agent, and part of the iron was put in his hands for sale, and he did sell part of it.

Q. How did the market price of iron at the time of these resales of this general character and description compare with the market price of iron at the time you received this letter of the 15th of November—Exhibit No. 1?

169 (Objected to by defendant as immaterial and incompetent. Offered to show that the delay in the sale did not work any injury to the defendant. Objection overruled. Defendant excepted.)

A. The iron market declined-——

(Objected to as not responsive.)

The COURT: Confine your attention to November 16th, or about that date, and the time when you actually sold the iron, and tell what the difference was in the market price, if any.

A. As near as I can say, about five or six dollars a ton lower.

By a JUROR:

Q. Lower when—from November until the time you sold?

A. Yes, sir; as near as I can recollect.

Q. State whether or not the prices that you actually realized on these resales of the iron, as stated in this account, were the fair market prices of that character and description of iron as stated in this paper?

(Objected to by defendant as immaterial and incompetent. Objection overruled. Defendant excepted.)

170 A. Yes, sir.

Q. They were?

A. Yes, sir.

By the COURT:

Q. Do you know what the actual price of Swedish pig-iron was in the middle of November?

A. I could tell by referring to my books, but I can't now.

By Mr. WHEELER:

Q. In answering a previous question you said the difference in price was six or eight dollars. To what time did you understand the question to refer?

A. I said five to six dollars.

Q. To what time did you understand the question to —refer the time of the original sales in February or the time of the subsequent sales?

(Objected to as leading.)

A. I hardly understood the question at first. I suppose it was between the summer and fall from the arrival.

Q. From the arrival of the iron?

A. Yes.

Q. That was not the question; the question referred to a different

date, and I should be glad if you would look at your memo-
171 randum and see if you can give that date.
A. Yes, sir.

Cross-examined by Mr. COUNTRYMAN:

Q. You were acting in the making of these sales of this iron to the Albany & Rensselaer Iron Company as agent of N. M. Hoglund's Sons & Co.?
A. Yes, sir.
Q. Of Stockholm?
A. Yes, sir.
Q. They were the owners of the iron?
A. Yes, sir.
Q. And you made these contracts simply as their agent?
A. Yes, sir.
Q. You reported these sales or these contracts to your principals at Stockholm immediately afterward?
A. Yes, sir.
Q. Did they approve of the contracts?
A. Yes; they approved with objection to the analysis guarantee.
Q. Was any such rejection ever notified to the other side?
A. To the defendant?
Q. Yes.
A. No, sir.
172 Q. You mean that they lectured you as their agent for making such a contract?
A. I suppose so.
Q. But they did not repudiate the contract with the iron works?
A. No, for the reason that I did not think there would be any trouble.
Q. They objected to your having made such an agreement for an analysis?
A. Yes, sir.
Q. The iron was shipped from Sweden under those contracts that you made?
A. Yes.
Q. You have no interest, then, in those contracts, except as the agent for this company, acting as their servant?
A. Yes, sir.
Q. That is all?
A. Yes.
Q. And no other interest in this suit except as their agent to enforce this contract, if possible?
A. Yes, sir.
Q. In all your correspondence with them in reference to these very contracts, it appears on the face of your letters or letter-heads that you were acting as the agent of N. M. Hoglund's Sons & Co.?
A. Yes, sir.
173 Q. You paid no commission to anybody for making any resales of the iron?
A. Yes, sir; I did.

Q. To whom?
A. To the Philadelphia agent.
Q. He was in your general employment?
A. Yes.
Q. But you employed no special agent to make these particular resales?
A. No.
Q. Paid no commission for that purpose?
A. No.
Q. How much of the entire amount of the iron did he negotiate the resale of of the eight hundred tons?
A. It was something like three hundred and fifty or four hundred tons, as near as I can remember now.
Q. What are his commissions as your agent generally?
A. One per cent.
Q. What is the name of that man?
A. Albert Potts.
Q. Have you any means of ascertaining about the date that you were in Troy and had this interview with Gen. Marvin?
A. I could by referring to the office memorandums, I suppose.
Q. Anything you have got here short of Boston?
174 A. No, sir; nothing this side of Boston.
Q. You obtained some samples there?
A. Yes.
Q. How many samples were there?
A. There were of each two borings taken; there were three parcels.
Q. How were they marked?
A. With each brand.
Q. Who put up these parcels?
A. Dr. Wendell.
Q. You didn't have anything to do with putting them up?
A. I was helping him.
Q. Were you present when they were put up?
A. Yes, I was.
Q. Did you assist in putting them up?
A. Yes; I helped with the paper.
Q. It appears that two of these parcels were marked with one brand on the inside and another brand on the outside?
A. I don't know anything about that.

Mr. WHEELER: Those were the ones that came from the defendant afterwards.

Q. In this interview with Gen. Marvin at Troy, you say that you suggested to him that he could name some chemist other than Mr. Wendell; he had at that time reported to you several analy-
175 ses from other chemists, had he not?
A. He said that there were other tests made.
Q. He reported to you at Boston by letter several analyses that he had had made, both by Mr. Wendell and other chemists, as you understood from him?

A. I don't remember that; I remember that he said that there was some Albany chemist that confirmed Dr. Wendell's test.

Q. Was that in the interview or in the letters?

A. I think that was in the interview.

Q. Didn't he write it in some of the letters that passed between you and him that he had some analyses made?

A. Yes, sir.

Q. By other chemists than by Mr. Wendell?

A. As near as I can recollect, he said that they confirmed Dr. Wendell.

Q. And he gave you what the analyses were?

A. No, sir.

Q. Didn't he state to you the amount?

A. No, sir.

Q. In any case?

A. The only ones he gave were those of Dr. Wendell.

Q. Are you sure of that?

A. Yes, sir; I am pretty positive of it.

176 [Q.] You are mistaken about that, I think.

A. It is three years ago.

Q. You won't undertake to be positive?

A. Pretty positive.

Q. Well, you stick to it, then?

A. Yes; I stick to it.

Q. Didn't Mr. Marvin say, in this personal interview at Troy, as a reason for rejecting your proposition, that he had had analyses made and was satisfied, and that he would not be at any more trouble about it, and that he wouldn't accept the iron; wasn't that the reason he gave?

A. He was reiterating all the time that he wouldn't take the iron because it did not compare with his analysis.

Q. And you were trying pretty hard to induce him to take it?

A. Well, I felt pretty sure that we were right.

Q. Well, you were trying to induce him to take the iron under the contract?

A. Yes; I tried to show him that we were right.

Q. When did this iron arrive at New York?

A. The 9th of June, 1880, I think.

Q. About how soon after did Mr. Marvin report to you that the iron was defective?

177 A. I think it was the first or second of July.

Q. Wasn't it earlier than that?

A. It might have been in the latter part of June, but it took, maybe, two weeks or more to get it there.

Q. It took some time to get the iron up to Troy from New York?

A. Yes, sir.

Q. And then to have analyses made?

A. Yes, sir.

Q. What is your best recollection now as to about the date when you were in Troy?

A. I can't tell you the date when we were in Troy.
Q. Was it in September?
A. I can't say as to the month, but I recollect that it was one or two days after receiving that letter in which he declined.
Q. That letter was in August?
A. It was very shortly after that that I went to Troy.
Q. Then it must have been about the first of September that you went to Troy?
A. I wouldn't say the date.
Q. Was it later than September, in your judgment?
A. No; I don't think it was later.
Q. It must have been the first of September, or about that time?
178 A. I wouldn't say as to the dates; I can't say.

By Mr. WHEELER:

Q. It was very soon after that letter?
A. Yes, very soon after that letter.
Q. Did Prof. Chandler report to you the result of the analysis of the borings you left with him that you speak of after you left Troy?
A. Yes, sir.
Q. About how soon after that?
A. It was about a week or ten days.
Q. Did he report to you more than one analysis?
A. The same borings?
Q. Yes; that you had left with him or give any report; did you have two reports from him?
A. I think not.
Q. You don't recollect as to that?
A. I don't recollect that.

(Showing witness a paper.)

Q. Is that one of the reports that Mr. Chandler made to you?
A. This was to Mr. Griswold.

(Showing another paper.)

Q. Is that the one Mr. Chandler reported to you?
A. You have got my letter and somebody else's analysis.
179 Q. There was an analysis attached to this letter that you sent; wasn't there?
A. I copied the analysis in this letter.
Q. Is that the analysis contained in the letter that you received from Prof. Chandler?
A. Yes, sir.
Q. Is that your letter containing the Sharples' analysis and the letter accompanying it?
A. Yes, sir.
Q. It is dated what?
A. July 3rd, 1880.

(The letter is marked for identification A.)

Q. That is your letter of September 2, containing Dr. Chandler's analysis?

A. Yes, sir.

(The letter is marked for identification B.)

Q. And is that your letter of July 29th, containing the second Sharples analysis?

A. Yes, sir.

(The letter is marked for identification C.)

Plaintiff's counsel read in evidence the deposition of Edgar R. Hills, taken under commission in Boston on behalf of the plaintiff. The witness gave evidence tending to show that he was an analytical chemist and had been for four years; that in June, 1880,
180 he made analysis of the different brands of iron to which his name is appended in the table Exhibit 13, with the result therein stated, and identified the samples from which such analyses were made.

Plaintiff's counsel read in evidence the deposition of Stephen P. Sharples, taken under commission in Boston, on behalf of the plaintiff.

The witness gave evidence tending to show that he was by profession an analytical chemist, and had been for nineteen years; that he had frequently made analyses of iron to determine phosphorus and other substances, and had analayzed substances other than iron for the determination of phosphorus; that in July, 1880, he made the analysis of the different brands of iron to which his name is appended in the table, Exhibit 13, with the results therein stated. He identified the samples from which such analyses were made. He was then asked the following question by plaintiff's counsel:

72. I wish top resent for your judgment the following case: Samples
are taken from different pigs of the same lot of iron, and are
181 analyzed by different chemists with the following results: The analysis of the iron marked G P H gives, as the result of the first analysis: Silicon, .930; phosphorus, .047; sulphur, .008; of the second analysis, phosporus, .05; of the third, .052 and a trace of sulphur; of the fourth, silicon, .975, a faint trace of phosphorus, and no sulphur; of the sixth analysis, for one sample, .031, and another sample, .025; the sixth analysis, silicon, .723; phosphorus, .020; sulphur, a faint trace; of the seventh analysis, a faint trace of phosphorus; and of the eighth, for phosphorus, .032. In your judgment, to what extent would the result of those several analyses indicate a material variance as to the quality and constituent parts of the bulk of the iron from which the samples were respectively taken from the following percentages: Silicon, .90; phosphorus, .03; sulphur, a trace?

(Objected to by defendant as incompetent and not within his sphere as a chemist. Objection overruled. Defendant excepted.)

A. These analyses, as you have read them, could not be
182 compared without knowing precisely how each chemist made his determination, and without further knowing whether

these determinations were all made on the same sample. I have known determinations which were said to be made on precisely the same sample that have differed far more widely than these, being made by different chemists, each chemist using the process with which he was most familiar (and in this connection I do not think that specimens taken from any one pig, or even ten pigs, would fairly represent a lot of five hundred tons).

Defendant's counsel further and specially objected to receiving in evidence the last clause enclosed in parenthesis as mere inference on a matter not within the witness' knowledge or experience. Objection overruled. Defendant excepted.

Witness continued: This iron being made in small lots, in all probability not exceeding thirty or forty tons at one casting, and the lot being made up in this way of several days' work, there are slight accidental variations in the working of the furnace, in the ores, and in everything connected with it that may change
183 the character of the iron to a far greater extent than has been shown by these analyses which have been read.

73. As a matter of fact this iron was made from ores of the same quality and was made in the same furnace, and these samples were taken from different pigs, and the analyses were made by at least four different chemists. With those facts in view, do you wish to add anything to your answer to the previous question?

Defendant's counsel duly objected thereto as immaterial, incompetent, and not within his sphere as an expert, and also that the analyses mentioned have not been proved. Objection overruled. Defendant excepted.

A. I do not.

74. State whether or not, in your judgment, the variations in these different analyses are greater than you would naturally expect in analyses made by different chemists and from different samples of the same lot of pig-iron, that iron being a lot of about 500 tons.

Defendant's counsel objected on same grounds as last above. Objection overruled. Defendant excepted.

A. They are not.

184 75. State whether or not, in your judgment, they indicate a material variation in the quality of the bulk of the iron from the quality which would be indicated by the analysis—for silicon, .90; for phosphorus, .03, and for sulphur a trace.

Defendant's counsel objected on same grounds as last two questions. Objection overruled. Defendant excepted.

A. As I recollect the figures that you have given from the four chemists, the average will be very close to the last analysis quoted.

76. What is your judgment as to the materiality of the variation in reference to the quality of the bulk of the iron?

Defendant's counsel objected on same grounds as before, and also

because it involves a conclusion of law as well as a conclusion of fact. Objection overruled. Defendant excepted.

A. The average being the same, I should not say there was any variation.

78. I put you the following case: Analyses are made of iron marked S B V E, being the samples taken from different pigs of the same lot, and the result of the analyses is as follows: Of the
185 first, silicon, .931; phosphorus, .042; sulphur, .012; of the second, phosphorus, .048; of the third, phosphorus, .044; sulphur, .005. Those are all made in the same establishment. The next analysis is by a different chemist, with the result—silicon, 1.113 per cent.; phosphorus, a trace; sulphur, none. Another analysis, under the direction of the same chemist, shows phosphorus, .022. Another analysis, by another chemist, shows silicon, 1.005; phosphorus, .041, and sulphur none. Another analysis, by a second chemist, shows phosphorus, .01; and another, by the same chemist, shows phosphorus, .032. To what extent, in your judgment, would the result of these several analyses, under the circumstances stated, indicate a variation in the quality of the bulk of the iron as represented by the following analysis: Silicon, .75; phosphorus, .024; sulphur, .02?

Defendant's counsel objected on the grounds—

1. There is no proof of these analyses, or of the method, or of the manner in which the methods were pursued by the different chemists.

2. As incompetent and immaterial.

186 3. It is not within the province of a chemist as an expert.

Objection overruled. Defendant excepted.

A. The first chemist's analysis averages .044 of phosphorus; his highest differs from his lowest by six-thousandths of one per cent.; the second chemist's analysis averages .016; his highest differs from his lowest thirty-two thousandths of one per cent.; the third chemist only made a single determination; the average of all these determinations is .034 of one per cent.; this differs from the quoted analysis one-hundredth of one per cent., differing from that only one-third as much as the second chemist's analyses differs from each other, and differing from it only four-thousandths more than the first chemist's analysis differ from each other; if the second chemist's results were obtained by the same method in each case, then this difference is far within his limit of error; it slightly exceeds the first chemist's limit of error as shown by these analyses.

79. Explain what you mean by expression "limit of error?"

A. A variation from the average of his analyses.

187 82. Now, you have answered my question in reference to the percentages of phosphorus; will you also answer it in reference to the percentages of silicon and sulphur?

Defendant's counsel objected on the same grounds as last above. Plaintiff's counsel then waived the question and asked permission

to read the answer. Defendant's counsel objected on the same grounds. Objection overruled. Defendant excepted.

A. The percentages of sulphur are practically the same; eight-thousandths of one per cent. would be called by most chemists a trace; a precipitate as small as this, without it was requested particularly that it should be weighed, would rarely be weighed.

83. Now, as to the silicon.

Defendant's counsel objected on the same grounds as last two above. Plaintiff's counsel then waived the question and asked permission to read the answer. Defendant's counsel objected on the same grounds. Objection overruled. Defendant excepted.

188 A. The variation in the silicon is not greater than it is customary to find working on different samples, especially when the source of error, which is always present, of a little sand from the pig is considered.

85. Now, I call your attention to the following case: Analyses are made of different samples from different pigs of the same lot of iron, marked N B B B K, with the following results: The first analysis shows, for silicon 1.022, for phosphorus .049, for sulphur .016; the second, from the same establishment, shows for phosphorus .045; the third, from the same establishment, shows .049 for phosphorus and .007 for sulphur; the fourth analysis, by a different chemist, gives for silicon 1.199, for phosphorus none, and for sulphur none; the fifth analysis, by the same chemist or under the same direction, shows for phosphorus .028; the sixth, by the same chemist or under the same direction, shows for phosphorus .01; and the next, under the same direction, shows for phosphorus .025; the next analysis, by a different chemist, shows for silicon .699, for phosphorus .005, and for sulphur a faint trace. To what extent, in your judgment, would the variations in these several analyses indicate a material variation in the quality of the bulk of the iron from which
189 the samples were taken, as indicated by the guaranteed proportions—silicon, .75; phosphorus, .024; and sulphur, .02?

Defendant's counsel objected on the same grounds as last three above, and also as involving a conclusion of law. Objection sustained.

Plaintiff's counsel then asked permission to read the answer.

Defendant's counsel objected on same grounds and as incompetent and improper. Objection overruled. Defendant excepted.

A. The average of these eight determinations for phosphorus which you have given is .026 per cent.; of the quoted analysis or the guaranteed analysis it was .024 per cent.; this is practically the same, the variation being only two one-thousandths.

86. What do you say as to the silicon and sulphur?

Defendant's counsel objected on the same grounds as last above. Objection overruled. Defendant excepted.

A. The silicon is .973, a variation of two-tenths of one per cent.,

which variation can be easily accounted for by the difference
190 between the amount of sand and slag in the samples.

87. And as to the sulphur?

A. For sulphur every one has found less than the guarantee.

88. Now, as a matter of fact, the iron marked S B V E and the iron marked N B B B K was sold as one lot, and the lot weighed, in the aggregate, about 331 tons. Do you wish to add anything to your answer in reference to the quality of iron so marked, after being informed of the facts stated in this question?

Defendant's counsel objected on the same grounds as last above. Objection overruled. Defendant excepted.

A. I do not.

Cross-examined by Mr. COUNTRYMAN, of counsel for defendant:

89. If I understand your last half-dozen answers or more, in which you speak of your conclusions and opinions from a comparison of different analyses made from the same pig, or different pigs from the same body of iron, you are merely instituting a general average of those analyses, are you not?

A. Yes, sir; I have given each chemist's work the same value, entirely independent of his methods.

191 90. Do you also assume that each chemist is equally accurate in his manipulation of the materials and in pursuing his methods?

A. Yes, sir.

SAMUEL C. EATON, being duly sworn and examined as a witness for the plaintiff, testified—

"That he was an analytical chemist and has followed that profession for thirty years. He then gave evidence tending to show that he made the analysis mentioned in Exhibit 13, to which his name is appended, with the results therein stated, and identified the samples from which the same was made, and that the analysis of the S B B V E and N B B B B K iron was made by him from a mixture of equal parts of the two brands."

CHARLES F. CHANDLER, being duly sworn and examined as a witness for the plaintiff, testified:

By Mr. WHEELER:

Q. Where do you reside?

A. In New York city.

Q. What is your profession?

A. I am a chemist by profession.

Q. How long has that been your profession?

192 A. Since 1853, when I began my special studies.

Q. What positions, if any, which involve more or less knowledge of chemistry, have you filled during that time?

A. While I was a student in Berlin I occupied the position of volunteer assistant to Prof. Henry Rosa in his laboratory making

analyses. I then took charge of the laboratory at Union College and lectured upon chemistry and taught chemistry for eight years there. In 1864 I came to New York and took charge of the department of analytical chemistry in the school of mines at Columbia College, and that position I still hold. I have also a position as prof. in the College of Physicians and Surgeons and in the College of Pharmacy.

Q. Have you any connection with the health department; and, if so, what?

A. For many years I was the chemist of the health department, but for the last ten years I have been president of the department.

Q. What experience, during this time, have you had, and what extent of your study has been directed to the analyses of various substances, and, amongst others, of iron?

193 A. Analytical chemistry has always been my specialty, and for a great many years I made analyses constantly. In more recent years I have been assisted in this work by a number of my pupils, who have grown up and become my adjuncts.

Q. Amongst other portions of your occupation have you made it any part to make analyses for commercial purposes; and, if so, to what extent?

A. I have made commercial analyses ever since I returned to this country in 1856.

Q. Where are those analyses conducted at present, and where were they in 1880?

[A.] They were conducted in my private laboratory. I have two or three different laboratories at Columbia College in which the analyses are carried on.

Q. To what extent were those laboratories equipped in 1880 with the necessary appliances for the purposes of making the analyses as nearly perfect as possible?

A. We had everything that was known that was of any value for these purposes.

Q. Did you receive from the plaintiff, for the purpose of analysis, in 1880, three samples of borings of Swedish pig iron?

A. I did.

194 Q. Will you give us the numbers by which those samples were marked in your book?

A. 1790, 1791, and 1792.

Q. To which one of your assistants did you give that lot of samples for the purpose of analyses?

A. I gave them to Mr. Mackintosh.

Q. Did you after that in 1880 receive from the defendant, the Albany & Rensselaer Iron and Steel Company, any samples of Swedish pig-iron?

A. I did.

Q. What numbers did you give to those in your books?

A. 1795, 1796, and 1797.

Q. To which one of your assistants did you give those samples for the purpose of being analyzed?

A. To Mr. Arthur Elliot.

He then testified as to the competency of Elliott and Mackintosh as analysts, and gave evidence tending to show that he had been employed both by the plaintiff and the defendant to cause analyses to be made of the different samples of lots of iron in controversy.

He explained the different methods testified to by the differ-
195 ent witnesses, and the differences between them, and explained his reasons for thinking that some of these methods were preferable to others, and likely to give more accurate results. He explained certain tests that had been adopted by some of the witnesses for the verification of their final results. He further identified the samples of iron in the controversy, received by him respectively from the plaintiff and from the defendant, and delivered by him to his assistants, Elliott and Mackintosh, for an analysis. The witness was then asked by plaintiff's counsel the following questions:

Q. Who paid you for making the analysis of the samples that were sent you by Mr. Lundberg?

A. Mr. Lundberg.

Q. And who paid you for making the analysis of the samples that were sent by the defendant?

A. The Albany and Rensselaer Iron Company.

Q. Mr. Elliott has testified that he went to Troy; at whose request did he go?

A. I sent him to Troy at the request of Mr. Griswold.

Q. Who is Mr. Griswold?

A. I think he is one of the firm of the Albany and Rensselaer Iron Company.

Q. Mr. Chester Griswold?

A. Yes; Mr. Chester Griswold.

196 Q. This Cairn's method really is the Chandler method?

A. O, no.

Q. It was the result of your judgment as well as his?

A. It was.

Q. And you have since taught that method in the School of Mines?

A. No; the teaching of analytical chemistry is now placed upon my assistants.

Q. Yes; but it is taught there?

A. It is taught.

Q. And you taught it as long as you had charge of that department?

A. Well, Mr. Cairns had charge of the department when we arranged it.

Q. You never had charge of the department?

A. Yes; I had it for years.

Q. To what department do you devote your personal attention in the School of Mines now, especially?

A. General chemistry, covering the whole field of the non-metallic elements and the metals, and organic chemistry; and I also lecture on chemistry applied to the arts.

Q. Analytical chemistry you have had nothing to do with in the School of Mines?

A. Not since the authorities allowed me an adjunct.

197 Q. How long ago was that?

A. I should think it must have been seven or eight years ago.

Q. How long since you have made any analyses in person for commercial purposes?

A. I have made determinations quite recently; I am making them from time to time constantly.

Q. How many are you making now? Give us an average of the amount of time you are devoting to this speciality. How many have you made in the last year of iron determinations for phosphorus in iron?

A. I have not made any phosphorus determinations at all.

Q. How long since you have made any phosphorus determinations in iron?

A. I haven't made any for years.

Q. How many years?

A. I couldn't say exactly; perhaps ten.

Q. Ten years since you made any?

A. Any phosphorus determinations in iron; they have been made under my eye in my private laboratory constantly.

Q. I am talking about your personal manipulations?

A. But I have not done the manipulations myself.

198 Q. You have not analyzed, then, any of this iron in suit?

A. I have not.

Q. You say you that are doing quite a large business in the way of analyzing iron for different persons?

A. No; I didn't say that.

Q. What did you say on that subject?

A. I said I was constantly making analysis for commercial purposes.

Q. Well, I call it a business.

A. But you limit it to iron—I say in general.

Q. Have you kept a list of your analyses made for commercial purposes?

A. No, I have not.

Q. How many determinations have you caused to be made in the laboratory—say in the last five years—of iron for phosphorus?

A. I could not say; I have no idea.

Q. Can you give us some idea?

A. No, it comes in as a matter of routine.

Q. That is a small proportion of the analyses which you make in your laboratory?

A. Yes, that is a small proportion.

Q. You received from Mr. Lundberg the first samples of the iron in question for analysis?

A. I did.

Q. About how long was that prior to the time you received any from the defendant?

199 A. I can tell you exactly by referring to this book. (Referring to the book.) The sample from Mr. Lundberg was received on the 26th day of August, 1880. The sample from the Albany & Rensselaer Iron Works was received on the 8th of September, 1880.

Q. Were you informed that the analyses did not agree with those made from the same iron by other chemists?

A. I was.

Q. By Mr. Wendell, the chemist of the defendant?

A. Yes.

Q. And other persons, other outside chemists?

A. I was.

Q. Did you then request Mr. Elliot to go to Albany and see Mr. Wendell, the chemist of the defendant, and see if he could ascertain where the mistake was, if there was one?

A. I did; I asked Mr. Wendell to come here first, but he could not come, and then I requested Mr. Elliot to go there.

Q. Have you had other complaints made from your customers of the results of analysis obtained by your assistance?

200 A. I remember two cases in the last twenty-five years in which customers have complained of analyses in my laboratory.

Q. Do you remember a case where you made an analysis for Crocker & Bros.?

A. Yes; that was an analysis made by Dr. Waller.

Q. He is one of your assistants?

A. Yes.

Q. He made an analysis furnished to you to have made?

A. Yes; and he made a mistake.

Q. You concede that he made a mistake?

A. Yes; he made a mistake.

Q. Did you make a new analysis?

A. I don't remember; I have forgotten the particulars now.

Q. When was that?

A. I don't remember; it was many years ago.

Q. In 1875?

A. I think it was; he was not my regular assistant.

Q. Were the last analyses of all twice, and some of them three times, as much as the first?

A. I have no recollection; I simply know that there was a radical difference between the second determination and the first one.

201 Q. I call your attention to the figures of the first analyses and of the second and — to see whether they refresh your recollection?

A. No; they do not at all; there was a great difference.

Q. What are Crocker & Bros. in this city?

A. Iron merchants.

Q. And have a great deal of that work to do?

A. Yes.

Q. You had done their work for some considerable time?

A. I had.

Q. You are not doing that work now?
A. No; they never forgave that accident.
Q. You call it an accident?
A. Yes.
Q. What other case of complaint have you had?
A. I had a case a great many years ago with regard to a cargo of fertilizers, in which there was a mistake in the determination.
Q. Had not you also previous to this lot of iron made an analysis for the Albany and Rensselaer iron works, the defendant in this case?
A. Very likely.
Q. In which there was a complaint made?
202 A. I have no recollection of it. People are often dissatisfied because their ores are not as rich as they supposed they were; I have had that sort of surprise.
Q. I am speaking of analyses that were made by other chemists and compared with yours, as in the case of the Albany and Troy Iron Works, where they had their own chemist make an analysis, and also had you make one.
A. I have no recollection of any such case.

The witness was then asked the following question by the counsel for the plaintiff:

Q. I call your attention to and ask your opinion upon this case: A contract for the sale of eight hundred tons of Swedish iron of well-known brands, not yet manufactured, is made in February for shipment in May; a Swedish analysis is furnished and guaranteed; after the arrival in this country the following analyses are made: 1, one set by Prof. Sharples, of Boston, from a set of pigs received from the appraiser at the New York custom-house; 2, another set by Prof. Sharples' assistant from another set of pigs furnished by the defendant; 3, then a determination by Mr. Mackintosh from
203 mixed samples of two pigs of each brand, which samples consisted of borings made under the joint inspection of the defendant's chemist and the plaintiff; 4, a determination by Mr. Mackintosh from other portions of these same samples; 5, a determination by Mr. Elliot from samples of the same brands furnished by the defendant; 6, a second determination by Mr. Elliot from other portions of the same samples; 7, an analysis of samples furnished by the defendant from each of these brands by Prof. Browne, of Easton; then an analysis of one of the brands from Mr. Shimer; 2nd, an analysis of each of them by Messrs. Humphreys & Sherered, of Scranton, Pennsylvania; 4th, by Mr. Ford, of Pittsburg; 5th, by Mr. Wirth, also of Pittsburg, all of these samples being furnished by the defendant. Now look at the table in your hand which shows the result of all these determinations and state whether, in your judgment, the results of the several analyses under the circumstances stated would indicate a variation in the bulk of the
204 iron from that shown by the guaranteed analysis, which also appears in the table.

Mr. COUNTRYMAN: To that question we object as incompetent, improper, and not a matter of opinion upon which a chemical ex-

pert can pass; that it is rather a question of experience, to be determined from the actual handling and using of iron in the course of manufacture by a manufacturer or person in charge of the works; that it is a question to be determined by the jury and not by any witness; that the opinion of the witness is inadmissible, and that it does not appear that the witness is competent to pass on that proposition as an expert; that as such he has no experience on that particular subject.

The COURT: I sustain the objection to that question because it assumes a good many facts that do not appear.

The COURT: You may show him that table and ask him, assuming that all those analyses were correctly and properly made by competent chemists, what, in his judgment, that would indicate in regard to the whole bulk.

Q. Have you ever had any actual observation of the manufacture of iron?

205 A. I have. I was employed by the Boonton, New Jersey, Iron Works for a time as their consulting chemist; visited their works, watched the operations, sampled their products, analyzed them or had them analyzed under my supervision; I have been in the habit of visiting iron works from time to time, to say nothing of reading, to a greater or less extent, on the subject.

Q. And what iron did they make at these Boonton Iron Works?

A. Pig-iron; they also made bar-iron there and nails.

Q. And from what did they make this pig-iron?

A. From ores.

Preliminary cross-examination by Mr. COUNTRYMAN:

Q. When was it you acted in this capacity for the Boonton Iron Works?

A. I should think it must be some ten or twelve years ago.

Q. How long did you act in that capacity?

A. About a year.

Q. Where is that situated?

A. Boonton, New Jersey.

Q. How far from here?

A. I can't say.

206 Q. About how far?

A. It took two or three hours to go there.

Q. Where were you living at that time?

A. In New York.

Q. How often did you go there?

A. I think I may have been there half a dozen times.

Q. In the course of that year?

A. Yes.

Q. You were consulting chemist?

A. Yes, and analyzed their products for them; of course the work had to be done in my laboratory here. I only went there to get my samples and see how the work was carried on.

Q. Did they have a chemist there?

A. No, sir; they did not.

Q. You went there for what purpose?

A. To see what was going on and to see what samples I would better take to throw light on the process.

Q. They had a regular superintendent?

A. O, yes, sir.

Q. You had nothing to do with the running of the works?

A. No, sir.

Q. Or the management of it?

A. No, sir.

207 Q. You had nothing to do with the mixing of the iron?

A. No, sir.

Q. You had nothing to do but to make analyses of samples furnished to you for the purpose?

A. I visited different mines——

Q. Never mind that; just answer my question?

A. I was going to tell you what I did.

Q. Did you have anything to do with the management of the works except to analyze samples of iron furnished to you for that purpose?

A. I was called in particularly——

Q. Will you answer my question?

A. I gave advice and counsel.

Q. About what?

[A.] The general selection of ores. It was the object I was called for, to consult with Mr. Hunt, one of the proprietors, with regard to the different ores which would be most likely to produce the best product; so I visited the mines with him and examined the different ores, and selected my own samples from each of the mines. I have watched the running of the furnaces and took my sam-

208 ples of slag, and pig-iron and fuel, so that I might have samples of all the materials and all the products, in order to analyze them to ascertain whether the careful analysis of materials or products would throw light on the proper mixing, with a view to improving the working of the furnace.

Q. With a view of getting a standard of the pig to be produced from those irons?

A. No; with a view of improving the working of the furnace.

Q. And with a view of getting a standard for whatever they wanted?

A. Yes.

Q. You had nothing to do really except, from a comparison of these various irons and the elements they contained, to determine, as a chemist, what combination *of* those different kinds of iron would produce in smelting?

A. I don't understand what you mean.

Q. You calculated from a comparison of the elements contained in these various irons that were to be used in the furnace what the product would be?

A. No; I never made any such calculation.

Q. What did you do?

A. I did just what I told you; went over there with Mr.
209 Hunt from time to time expending two or three days with him, talking iron with him, and as examining his results and his products and making analyses for him and talking about the results of the analyses.

Q. In other words, you examined what he had produced?

A. Yes; and we talked about what then would be advisable.

Q. In order to make the different products?

A. Yes; to get a better result.

Q. That is, taking into account the chemical ingredients of these substances as used?

A. Certainly; but for commercial purposes of course.

By Mr. WHEELER:

Q. To what extent, also, did you examine and make yourself familiar with the processes of smelting, in the production of pig?

A. Whenever I was over there I spent my time in the works, watching the workmen at different operations to become familiar with all the details, so that I might be in better position to give advice.

Q. To what extent, in your judgment, do the results of the analyses contained it the table you hold in your hand indicate
210 a variation in the quality of the bulk of five hundred tons of the G P H iron, and three hundred tons of the two other brands, from that shown by the guaranteed analyses which are also stated in the table—assuming that the table shown you correctly states the results, and that the analyses were made up by competent chemists? (See Exhibit 13, above red lines.)

(Here insert table.)

Mr. COUNTRYMAN: We renew our objection to the question on all the grounds before stated to the question of like character previously put to the witness, and I submit that now it appears affirmatively that the witness is not competent to give an opinion upon the subject.

(Objection overruled. Defendant excepted.)

A. Not to any extent.

Mr. COUNTRYMAN: I now move to strike out that answer on the same grounds on which I made the objection to the original question and because it appears that he is passing upon a question of fact, which is for the jury.

(Motion denied. Defendant excepts.)

Q. How do you account for the variation in these analyses?
211 A. The first suggestion is that the samples were different.

Q. What do you mean that the samples were different?

A. Why, that the samples analyzed by one party were not the same as the sample analyzed by another. As I understand it, these analyses have been made upon different pigs or slabs of the original metal.

Q. That is the testimony?

A. That suggestion by itself makes it unnecessary to assume that any one of these methods is inaccurate or any one of the determinations is at all too high.

Q. State to what extent it is a well-recognized scientific fact that determinations by different chemists from different samples of the same lot of iron will vary for phosphorus.

Defendant's counsel objected, on the grounds that it is incompetent, improper, and not a matter of opinion on which an expert can pass; that it does not appear that the witness is competent to pass on such a question, which is solely for the jury.

(Objection overruled. Defendant's counsel excepted.)

212 A. I could hardly give any figures, but I know that there are variations reported, for the amount of phosphorus in the different parts of the same slab in some cases and different runnings of the furnace would give variations. We never found two runs of iron at the Boonton furnace that contained exactly the same amount of phosphorus; different casts the furnace is tapped two or three times in twenty-four hours, and each lot of metal is a separate lot, and no two of them would be exactly alike.

By Mr. COUNTRYMAN:

Q. You may state how much you usually made at a cast.

A. That depends on the size of the furnace.

Q. In your case.

A. I don't remember; it was quite a large furnace.

By Mr. WHEELER:

Q. Can you give it approximately as to whether it was twenty-five or more tons?

A. I have a very dim recollection. I think they made about twenty or thirty tons a day. I have really forgotten about it, and I think they cast twice in twenty-four hours.

213 Q. So that your best recollection as to the amount or size of each cast is that which you have given?

A. Yes; but I can't remember at all positively about it.

(The table above referred to is put in evidence and marked Pl'ff's Ex. No. 13, as follows:)

(Here follows table, marked page 214.)

215 The witness was then further examined upon the various matters in issue between the parties.

Plaintiff rests.

The defendant's counsel thereupon moved the court to direct a verdict for the defendant on the following grounds:

1. It is an undisputed fact that the plaintiff in making the contracts in question and in all the preliminary negotiations acted as the agent of N. M. Höglund's Sons and Company, iron merchants at Stockholm, in Sweden.

2. It is also undisputed that the iron in question was the property of N. M. Höglund's Sons & Company, who were informed of the contracts and ratified them, and shipped the iron to defendant in pursuance thereof.

3. The defendant was also informed by the correspondence and on the face of the contracts that it was not dealing with the agent in his own behalf, but on behalf of his principals.

4. The action therefore cannot be maintained on the con-
216 tracts by or in the name of the agent. The court denied the motion and the defendant excepted.

The counsel for the defendant therefore asked the court to direct a verdict for the defendant upon the ground that the analyses attached to the contract stipulates that the amount of silicon in one case is .75 of one per cent. and in the other case .90 of one cent.; that all the analyses proven on the part of the plaintiff directly shows that there was more than these amounts of silicon, respectively, in these brands of iron, and that it thus appears that the plaintiff has not complied with the warranties contained in these contracts.

The court denied the motion and the defendant excepted.

Mr. COUNTRYMAN: Then, as to the contract of three hundred tons, I ask your honor to decide as matter of law that the plaintiff cannot recover on this contract, which includes the brands S B V E and N B B B K, as it appears affirmatively from all the analyses given in evidence that one or both of those brands contained more
217 silicion than is stipulated for in the contract.

The court declined so to hold and the defendant excepted.

CHARLES T. ARNBERG, being duly sworn and examined as a witness for the defendant, testified:

By Mr. COUNTRYMAN:

Q. Where do you reside?
A. At Troy, New York.
Q. Where were you born?
A. In Sweden.
Q. What is your business and present employment?
A. I am superintendent of the Troy Steel Works.
Q. How long have you occupied that position?
A. About five years.
Q. Were you there at the time the iron was delivered under these Lundberg contracts at your works?
A. Yes, sir.
Q. You saw the iron?
A. I saw the iron.
Q. Did you furnish to Mr. Sherrerd three cakes of iron or slabs for any purpose; and, if so, what?

A. I furnished three or more cakes of the Swedish iron to
218 Mr. Sherrerd, and I saw the drillings taken from them myself, in company with him.

Q. When was that?

A. That was in June, 1882.
Q. Was that a part of the Lundberg iron?
A. That was a part of the Lundberg iron.
Q. You left it in Mr. Sherrerd's possession?
A. I did.
Q. How were they marked, respectively?
A. Do you mean what were the trade-marks?
Q. The letters?
A. The brands were G P H, S B V E, and N b b B K.
Q. Are these slabs in court the ones which you delivered to Mr. Sherrerd?
A. I presume they are; I can tell by looking at them by the marks on them (looking at the slabs); yes, sir; those are the slabs.
Q. One each of those marks that you have mentioned?
A. Yes, sir.
Q. Is it a part of your duty to mix the irons that are used in the manufacture of iron and steel in your works?
A. Yes, sir; I mix the material.
219 Q. Can you use materials of different qualities and containing different percentages of phosphorus?
A. Yes, sir; it is a very common practice.
Q. In order to obtain a certain standard that you want?
A. In order to obtain a certain standard that I require.
Q. Using higer and lower?
A. Yes, sir.
Q. And mixing them so that a standard will be obtained?
A. Yes, sir; just so.
Q. What is the effect of phosphorus on iron and steel?
A. It makes it brittle; generally called "cold short."
Q. Is it known to the trade as "cold short?"
A. Yes, sir.
Q. Do you have anything to do with the sale or purchase of iron?
A. Nothing whatever.
Q. Is iron valuable in proportion to the smaller amount of phosphorus contained in it?
A. It becomes more valuable the less amount it contains of phosphorus. I don't refer to commercial purposes specially, but
220 I mean that for our purposes the less phosphorus there is the more valuable the iron is considered.
Q. Hence, if you don't want to manufacture steel with as little phosphorus as the iron contains you can, nevertheless, get the benefit of it by mixing it with a lower grade?
A. Yes, sir.

Cross-examined by Mr. WHEELER:

Q. I notice this block of iron is quite different in shape from all the other specimens; how do you account for that?
A. Do you mean that block as it is now?
Q. Yes.

A. That block was cut in pieces by Mr. Sherrerd. I saw him take it to the machine shop and saw him have the thing done.

Q. It was not cut in pieces from a cake like that, because it is thicker?

A. It was cut in pieces from a cake that came with that cargo. I should say that that piece represents about the average thickness of the metal as it was sent to us.

221 Q. Do you mean to say this cake now produced in court by Mr. Lundberg, marked G P H, is thinner than the average of cakes?

A. One of them is, as you see.

Q. Here it is; look at it; you do say that, do you?

A. Yes; and there is one next to that that is thicker again.

Q. Yes; but none of the cakes produced in court by you or by us in their original shape are as thick as this parellelogram, with the one exception that you have produced; that is so, isn't it?

A. I believe there is some difference in the thickness; yes, sir.

Q. Then do I understand you to say that the cake from which the cubical block that you produce, marked G P H, was cut is not thicker than the original pig from which it was cut?

A. No, sir; it is not thicker.

Q. What was the object of reducing it to that size?

A. For convenience of carrying it, as much as anything, and also I should say another advantage is in getting at the interior of the iron with greater facility for getting samples.

222 Q. I notice in this cubical block which you have produced and to which I call your attention the drillings go to different depths, each one deeper than the one before. What was the object of that?

A. I presume simply a case of accident; I don't know what the reason would be.

Q. I also notice that the holes are close together and not distributed through the body of the pig; was that simply accidental?

A. I presume it was.

Q. You don't know any other reason?

A. No, sir; I do not.

Q. How did it happen that you had those pigs of iron on hand after the commencement of this suit?

A. The small pig was the original sample pig that I went out with Dr. Wendell and we selected from the pile, the smaller of the G P H.

Q. Then, as I understand you, this pig which you have produced in court was the original sample from which Mr. Wendell made his analyses at the beginning.

223 A. I can't say that that is the only one, but that is one of them, because that is one of the first that I remember.

Q. And that cake, I understand you, *to be* very much thinner than any of the pigs that were sent by Mr. Lundberg under these contracts?

A. Yes.

Q. Do these larger pigs, which are now in court in this box pro-

duced by Mr. Lundberg, and the other two lying on the table produced by you fairly represent the average seize of the pigs?

A. In my judgment they do.

Q. And this thin cake is exceptionally small?

A. It was rather small; yes, sir.

Q. In the process of making these pigs, as I understand it, molds are made in the sand and the iron as it comes from the furnace in the molten condition is run into these molds?

A. I believe that is one of the practices.

Q. Now what impression would the thinness of this pig convey to you as to the portion of the cast from which what particular
224 pig was made; wouldn't it impress you with the idea that it came at the end, and that the iron did not run enough to fill up the mold?

A. Not necessarily at the end, but it looks as if there had been some slight obstruction in that one case preventing all the iron from running in.

Q. And of course while that would not affect the lettering, which would be in the bottom of the mold, it would prevent the metal metal from rising in the mold to the top?

A. Yes, sir.

THOMAS H. GARRETT, being duly sworn and examined as a witness for the defendant, testified:

That he was an analytical chemist and had followed that profession for over 30 years, and had frequently made analyses of iron for the determination of phosphorus and other substances. He identified the 3 whole pigs produced by Arnberg and testified that he had taken samples from each of them and made from such samples
225 for the defendant the analysis to which his name is appended in the table, Exhibit 13, and firstly specified therein with the date 1882, and with the results therein stated. He described the method he pursued in making the analysis and explained his reasons for it.

The witness further gave evidence tending to show that in 1880 he analyzed for the defendant certain other samples of pig-iron; that he received the samples by mail from the defendant in the form of borings, accompanied by a statement of the brands, which brands so stated were the same as the three brands in controversy.

Robert W. Hunt was then called to identify these samples, and having given testimony tending to show that they had been taken from the iron in controversy the witness, Garrett, further testified that he had analyzed them, with the results stated in the table, Exhibit B, appended to the name Garrett, 1880, and according to the same method pursued by him upon his analysis in 1882.

Alfred S. Bertolet, being duly sworn and examined as a
226 witness for the defendant, testifies that he was an analytical chemist, and had pursued that vocation since 1873; that he had made many analyses of iron for the determination of phosphorus and other substances, and that he had made an analysis in

1882 for the defendant of samples of iron taken in his presence from the pigs produced by Arnberg, already referred to, with the results appended to his name in the table, Exhibit B. His examination then proceeded as follows:

By DEFENDANT'S COUNSEL:

Q. Did you make any other analyses of these samples than the ones you have just given?
A. Yes, sir.
Q. When were those made?
A. November 13, 1880.
Q. For anything else but phosphorus?
A. No, sir.
Q. Just for phosphorus in those tests?
A. Yes, sir.
Q. The same brands?

Objected to.

227 Q. How did you receive those samples that you analyzed at that time?
A. These samples were sent to me by Dr. Wendell in a letter.
Q. You received them by mail?
A. Yes, sir.
Q. Did you report the results?
A. I did.
Q. Were they the same brands?

The same objection. Objection sustained.

Mr. COUNTRYMAN: I shall prove, in addition to that, that Mr. Hunt directed the samples to be sent of this iron to this gentleman. It is admitted that Mr. Hunt will so testify.

Objection sustained. Defendant excepted.

Q. Did you make any other analysis of this iron intermediate 1880 and the time you made the series you have testified to?
A. No, sir.
Q. Have you made any since?
A. No, sir.
Q. Did you take any from that block?
A. That is G P H No. 2.
Q. You refer to G P H No. 1 and No. 2?
A. Yes, sir.
228 Q. The G P H No. 1 was from the thin cake?
A. Yes, sir.
Q. And No. 2 was from the block?
A. Yes, sir.

Cross-examined by Mr. Wheeler:

The witness was then cross-examined and re-examined in regard to the matters testified to by him on his direct examination.

And he further testified that he was employed by three different companies which manufactured pig-iron, blooms, and billets; that

as the ore is melted in the furnace it is tapped periodically at the bottom and drawn off, and each of those tappings is called a cast, varying in amount at their works from ten to fifteen tons; that he had tested for phosphorus in the same cast and never found any more difference in the same cast than is allowable in duplicate analyses of the same sample not to exceed .005 of one per cent.; that he had made three or four such tests a number of years ago and
229 not recently. He also testified that in the process of smelting, as a rule, it required two tons of ore to make one ton of pig-iron; that all the phosphorus in the ore goes into the pig, and that phosphorus is also accumulated in the pig from the fusing materials—the coal and flux or limestone and coke.

He further testified as follows:

Q. You understand that this Swedish gray pig-iron of this quality is charcoal-iron, do you?

A. I understand so.

Q. And there is less likelihood of there being phosphorus in that substance than in coal, isn't there, or don't you know?

A. I don't know how much phosphorus there is in charcoal; that is a thing I have never looked into.

Defendant's counsel read in evidence the deposition of T. M. Drowne, as follows:

The witness testified that he was an analytical chemist and had followed that profession since 1860, and that he had frequently made analyses of iron for the determination of phosphorus and
230 other substances. He then gave evidence tending to show that he had analyzed samples of iron taken in his presence from the three pigs produced by Mr. Arnberg, before referred to, with the results appended to his name in the Exhibit Table 13. He further explained the process adopted by him in making such analysis and his experience in making analyses of iron for the determination of phosphorus and other substances.

Defendant's counsel read in evidence the deposition of P. W. Shimer, as follows:

The witness testified that he was an analytical chemist and had followed that profession since 1874, and that he had frequently made analyses of iron for the determination of phosphorus and other substances. He then gave evidence tending to show that he had made duplicate analyses of a sample of the pig marked S B V E produced by Mr. Arnberg, with the results stated in the table, Exhibit 13, appended to his name. He further explained the method
231 adopted by him in making such analysis.

Defendant's counsel read in evidence the deposition of Alexander H. Sherred, as follows:

The witness gave evidence tending to show that he had been an analytical chemist since 1872, and had frequently made analyses of iron for the determination of phosphorus and other substances;

that in conjunction with D. W. Humphrey he made an analysis of samples of iron taken in his presence from the three pigs produced by Mr. Arnberg, with the results stated in the table, Exhibit 13, appended to the name Sherred and Humphrey. He further testified that he personally performed part of the manipulations adopted by them in making such analyses.

He further testified as follows:

Q. What do you understand by slag, spoken of in connection with the pig-iron?

A. I understand that it is an impurity in the iron ores mixed with it, and the object is to get rid of the slag as much as possible.

232 Q. In manufacturing pig?

A. In manufacturing the pig.

Q. What is done with the slag?

A. They say it is considered worthless, except for filling up some cavity; it is drawn off separately and thrown away; it is lighter than the pig-iron and floats on the surface.

Q. If slag, then, was found in the pig, if I understand you, it would be a defective pig, whatsoever kind of iron it was.

A. I think so.

Q. In manufacturing pig-iron what becomes of the phosphorus contained in the original ore?

A. I think it almost entirely goes into the pig-iron.

Q. And not into the slag?

A. No, sir.

Cross-examination by Mr. WHEELER:

Q. What is the process in smelting iron by which you undertake to remove the slag?

A. The melted matter collects in the bottom of the furnace, called the hearth, and the slag floats on the surface of the iron;

233 when it gets up to a certain point it is drawn off through a hole and opening in the furnace, and when the iron reaches about that point and runs, just before it will run out, the furnace will have to be tapped for the iron; there is a large body of melted iron in there that is accumulating little by little for a number of hours, and it ought to clear itself of slag if the furnace is running properly.

Q. The slag being lighter would flow on the surface and run through the hole provided for the purpose?

A. Yes.

Q. What experience have you had in examining iron for pig-iron?

A. I have been around the furnaces most every day since I am there; the reason I did not carry this analysis all the way through is because my duties are outside to a great extent.

Q. What were these operations of the company in whose employ you are?

A. They manufactured Bess-mer rails to a large extent, some merchant bar-iron and some merchant steel.

Q. Does that company make, then, the pig out of which the rails are made?

234 A. Some of it, but not all.

Q. How often do you have occasion, in the discharge of your duties as chemist for the company, to analyze Bess-mer pig?

A. We analyze from each furnace every day for silicon, each furnace that is running, and frequently for sulphur and phosphorus, and all the pig-iron that is purchased, and spiegle and ores are constantly analyzed; we make weekly analyses of the ores received for phosphorus, sulphur, and iron in the ores,

Q. What percentage of the phosphorus do you find ordinarily escapes in smelting the ore in the Bess-mer pig?

A. I don't know whether I can tell you that—they use so many different ores all mixed together—and sometimes it is one proportion and sometimes another, and it takes two or three days for a charge to get down, and we never made any particular investigation into that, only we have found that the slag from the furnaces always has a very small proportion of phosphorus in it—that is, the

235 proportion of phosphorus in the pig-iron made at the same time; that is what we would call almost a trace in working on Bessemer ore.

Q. Does any of the phosphorus escape in the fumes from the furnace by volatilization?

A. I am unable to say.

Q. Do you not find, as a general thing, that certain grades of ore are almost uniform in their percentage of phosphorus?

A. There are some ores we get that vary considerable in their percentage of phosphorus and others you would rather call uniform, but I think, probably, one reason for that is different benches of a vein of ore carry different amounts of phosphorus; sometimes we get more from one bench than from another.

Q. By benches you mean the different strata where the mining proceeds?

A. Yes.

Q. Is not that, as a practical result, one of the points you make—the examination of ore for your Bessemer pig?

A. I do not exactly understand the question; you mean a

236 regular amount of phosphoric acid or low amount?

Q. Well, both.

A. We try to get Bessemer ores with a very low amount of phosporic acid.

Q. It is important in the manufacture of steel rails to have the pig out of which the rails are made as low in the percentage of phosphorus as possible, is it not?

A. Yes; low for Bessemer steel rails. Sometimes we don't care whether it is as low as is possible. It may be .06, .07, or .09. We don't care if the other elements of it are in the right proportions. It does not make any difference in the rail steel, but it might in the merchant steel, because some parties require certain proportions; and in order to do that certain kinds of pig-iron must be mixed together to get the required portions.

Q. In making the rails the percentage of phosphorus you mention in the steel would not be considered as excessive?

A. No, sir; not at all.

Q. What percentage of silicon would you consider excessive?

237 A. We try to keep it below the tenth of one per cent., and it has been that way for a long time, so far as I know, unless it is a bad blow. I mean the average keeps below that—a great deal below.

Q. A tenth of one per cent.?

A. A tenth of one per cent. we would not consider bad steel, but it happens that our average has been a great deal less than that; that is good steel for rails, not for merchant steel.

Q. What do you mean by merchant steel?

A. Well, parties buy merchant steel on an analysis and want it very pure—a certain grade—and it is generally termed merchant steel.

Q. What do you mean by merchant steel; is [it] steel bought for some special purpose?

A. For some special purpose other than steel rails.

Q. In giving the percentage of silicon, did you give the percentage in the finished rail or the pig out of which the rail was made?

238 A. There is a little sample generally taken when the steel is made in the converting department, and that is forged out and it is supposed to have about the same working as a steel rail, and the drillings are generally taken from that, but sometimes they are taken from the rail, and some parties want pieces of the steel rail furnished for analysis.

Q. But you gave the percentage out of the pig iron out of which the steel rail was made, and not out of the steel?

A. Yes.

Q. What percentage of silicon do you generally find in pig-iron which you buy or make for the purpose of converting into steel for steel rails?

A. It generally runs, as near as I can remember now, from thirty-five hundredths of one per cent. up to over six per cent.

Q. In converting that pig into steel you eliminate the silicon to a certain degree?

A. Yes.

239 Q. What is the ordinary percentage of sulphur in the pigs you buy or make for the purpose of converting into Bessemer steel rails?

A. We buy quite a good many different qualities of iron; we can use up to a certain amount iron that has a good deal of sulphur in it, if at the same time we are using other iron with little in it; sometimes the white iron is as much as two-tenths, and we must mix that with iron a good deal purer; we want to get it down below .07; just the same way with the phosphorus and the silicon; we have to have about a certain amount of silicon in the mixture to make the steel work properly; to do that we have to mix these different elements so as to get about the right proportions.

Q. Adding that you use some foreign iron as well as domestic iron?

A. We do use it, but do not necessarily use it; for the last few years we bought quite a good deal of foreign iron, because they could get it just as cheap.

Redirect by Mr. COUNTRYMAN:

240 Q. You spoke of using or mixing pigs containing different proportions of phosphorus, so as to get, finally, in manufacturing, the proper elements; American iron, as a rule, contains more phosphorus than foreign iron?

A. I think they do; all that I have had anything to do with, unless it is an American furnace working on foreign ores, then there is a good deal of similarity between them, of course.

Q. Is there much foreign ore imported and worked up here?

A. I think a good deal; our company has bought a good deal and the Bethlehem Iron Company too.

Q. The amount of phosphorus in a given rail manufactured after this manner which will be useful and serviceable will depend somewhat on the amount of other elements contained in the same piece of steel?

A. Yes.

Q. Do I understand you to mean by that to say that you may have more phosphorus, providing you have a less amount of some other element?

A. Yes.

241 Q. What other elements do you refer to?

A. Silicon, carbon, and manganese; they are all considered hardening elements, but in different proportions, and phosphorus is considered the most hardening of these elements.

Q. So that, in determining in a given case where a given amount of phosphorus is useful or detrimental, you must also know what the amount of carbon and sulphur and silicon is that it contained in the same piece of steel?

A. Not sulphur.

Q. Well, silicon, carbon, [and] manganese, then; and without knowing the amount of those other elements you could not determine what amount of phosphorus would be hurtful or useful?

A. No, sir.

Q. I suppose that different manufacturers in the country manufacture different grades of iron and steel—some poorer than others?

A. Yes.

Q. Some manufacturers of rails for railway purposes man-
242 ufacture poorer and some better than other manufacturers, and have different rates of charges in proportion?

A. Yes.

By Mr. CONNTRYMAN:

Q. This forenoon, in speaking of the phosphorus in iron and steel, you spoke of hardness of some constituents; what do you mean by that?

A. In regard to the phosphorus particularly I did not fully explain that; besides a certain hardening property it has also a certain vicious property, making the steel very brittle, and it was that property that I had particular reference to in regard to the phosphorus.

Q. You spoke of your work taking you outside of your laboratory; what is your work specially in those works?

A. To look after the quality of the limestone and of the ore, and the iron made and of the coal used, and the pig-iron made and received and the spiegle, and mix them in their proper proportions for use in the converting department, and watch the process all the way through until the rails are made.

243 Q. During the process of manufacture?

A. Yes; to see that the mixtures are carried on right and that the proper quality of steel is made.

Q. Do you have supervision of that department of the works, mixing the metals, and so forth?

A. Yes.

Q. And for how long a period?

A. For over two years.

Defendant's counsel read in evidence the deposition of D. W. Humphrey, as follows:

The witness testified that he was an analytical chemist, and assistant to the last witness, and had followed that vocation for several years; that in conjunction with Mr. Sherred he made the analysis testified to by that witness and mentioned in the table, Exhibit 13, under the name of Sherred and Humphrey's, and he explained the process adopted in making such analysis.

ROBERT W. HUNT recalled on behalf of the defendant:

The witness gave evidence tending to show that he was the
244 general superintendent of the defendant's iron and steel works, and had been since March, 1875; that he was familiar with the manufacture of iron and steel and with the purposes for which steel and iron were used; that the defendant manufactured a very large variety both of iron and steel, the largest output in the shape of steel rails, but about 20,000 tons of merchant and special steels a year, for such purposes, among others, as muskets and carbines, cotton rolls, mining drills, turning tools, springs, wire, rails, &c.; also what is called "dead soft steel" for drop forgings and the intricate parts of guns; that for such special purposes the extreme limit of phosphorus is .04, and they try to keep it down to .03, but 0.04 is their usual formula; that the defendant is the only manufacturer in this country making steel by the process known as the Bessemer converter, which is an entirely different thing from the open-hearth process; and the necessity for low phos-
245 phorus in that kind of steel particularly arises from the imperative importance of having a small percentage of manganese, which plays it- part in the practical manipulation of that steel.

The gun-barrels into which it is made are cut off in whatever length they use—thirty inches or twenty-seven inches—and they drill them first and then rifle them afterwards. If the steel throws a long fibrous chip their drills will run to one side, and they make bad work. By investigation and analysis we find that to prevent that long chip there ought to be low manganese, and with that grade of steel, with low manganese, to make it sound we had to have low phosphorus.

Q. In other words, does the amount of the phosphorus for certain purposes which is allowable in iron and steel depend more or less upon the amount of other elements, such as manganese, carbon, and silicon also?

A. The first and primary thing is what you are going to use the steel for; then its phosphorus depends upon the other elements in it.

246 Q. As to how much is allowable?

A. Yes, sir.

Q. What is the effect of phosphorus in steel or iron?

A. Giving it a brittle character—in a steel particularly.

Q. Is it more important to have a lower percentage of phosphorus in steel than in iron?

A. Yes.

Q. Why?

A. Because steels of many grades are tempered, which iron never is, and the strength, not the hardness, but the strength of that steel for tempering depends upon the minimum of phosphorus. That is one reason, and the other is that in the process of making steel phosphorus plays its part in the chemical reactions that take place during the actual making of that steel, while in iron the whole process of making wrought iron from pig-iron tends to eliminate phosphorus, whereas in making steel you are concentrating it all the time without loss; in other words, you are losing no phos-

247 phorus in the slags in the steel process, and consequently, as there is no loss *is* in that way, so you concentrate and increase theamount of phosphorus in the steel, but in the puddling process, on the contrary, the phosphorus goes to your slag and passes off.

Q. Then in making steel by your process you get all the phosphorus there is in the iron?

A. Yes, sir.

Q. And are you liable to get any more from other sources in the course of manufacture?

A. Not in making a steel proper, I should say, but we concentrate it.

Q. The bulk is reduced and all the phosphorus is concentrated in a smaller bulk?

A. Yes, sir.

By a JUROR:

Q. Is there no means by which the phosphorus can be destroyed or eliminated in the process of making the steel?

A. Not by the Bessemer process. A new modification of that process which requires a different plant, which is just being introduced, known as the Gilchrist and — process, will do it, but that
248 is not done in this country as yet; there is a continued improvement in the grade of steel being manufactured and better material is required; that the amount of pig-iron made at one cast varies from ten to fifty tons, according to the size of the furnace.

Q. I would ask you from your experience in this kind of work during these years what, in your opinion, is the extent to which phosphorus is disseminated and uniformly distributed through the iron and steel made at a single cast?

A. That question could not be answered by the same answer; the steel and iron differ in that respect.

Q. Answer as to each.

A. In the pig-iron I consider that one cast will not show any variations in phosphorus. I base that on reading and on analyses that have been submitted to me. I never made any myself. In steel, if it is allowed to cool slowly, it will vary in different portions if it is a large ingot—a large mass; if it cools quickly it will be
249 very uniform.

Q. We have more especial reference to pig-iron?

A. If you ask with reference to pig-iron I say practically it will show the same quality all the way through.

Q. How as to the different casts of one furnace?

A. That depends on the uniform character of the masses of ore that are going into that furnace.

Q. If the ores are pretty uniform?

A. The results will be pretty uniform.

Q. In your business is it usual to use material of different percentages of phosphorus and other elements in the process of manufacture at one time?

A. Yes, sir.

Q. Why is that?

A. In the first place we are governed by the result we want to obtain; second, by the materials we have on hand or can procure to obtain those results.

Q. Now, suppose you want to manufacture a steel in which you want to limit the percentage of phosphorus to .025 or .030 of
250 one per cent. and you have no iron or materials that you can use directly to accomplish that, but you have various lots on hand varying in their percentages?

A. We would make a mixture of the various irons we had, based upon our knowledge obtained from our analyses, in order to get an average giving us the result we wanted to obtain.

Q. You would make a mixture of irons containing higher and lower percentages to get that average?

A. Yes, sir; and if analyses of different pigs of the same lot or brand of pig-iron should disclose a variation in the amount or proportion of phosphorus contained in it it would be necessary in using it to assume that it all contained the highest figure or percentage of

phosphorus thus ascertained, as otherwise the product of steel might be rendered unfit for the purpose designed.

Q. You remember this iron that was purchased of Mr. Lundberg?

A. Yes, sir.

251 Q. Two lots, one of three hundred tons and one of five hundred tons?

A. Yes, sir.

Q. Was Mr. Lundburg's letter, which has been read in evidence here, of February 6, 1880, containing his analysis of these irons, submitted to you?

A. I cannot say about that, as I have not seen this letter that is offered in evidence, but I presume the whole correspondence was submitted to me.

Q. Was the analysis or the statement of these lots of iron submitted to you?

A. Yes, sir.

Q. Before you purchased?

A. Yes, sir.

Q. (Showing witness Plaintiff's Exhibit No. 7). This is the analysis?

A. Yes; that was shown to me.

Q. And what was your conclusion and recommendation with reference to it?

Mr. WHEELER: I object to that as immaterial, the letter and the contracts being in evidence. There is no doubt that we are obliged to comply with the terms of our contracts, but this question asks the judgment of the witness. It certainly is not competent.

252 Mr. COUNTRYMAN: I offer this with a view of showing that the purchase of this lot of iron was for a particular purpose.

Objection sustained. Defendant excepts.

Q. For what purpose was this iron purchased?

Mr. WHEELER: I object to that on the ground that the purpose was not communicated to the plaintiff.

Objection sustained. Defendant excepts.

The witness further testified that the actual value of iron and steel for use is largely dependent upon the amount of phosphorus contained in them. Swedish pig-iron, for instance, which is the lowest in phosphorus, was worth thirty-five dollars a ton in the market, when ordinary Bessemer pig could be bought for twenty-two dollars a ton, and that a "cast" of pig-iron is the amount drawn off or the product of one operation at the furnace, and he also corroborated the witness Marvin as to the personal interview between him

253 and the plaintiff at the city of Troy.

Defendant's counsel read in evidence the deposition of Samuel A. Ford, as follows:

The witness testified that he was an anaytical chemist, and had

followed that vocation since 1866, and had often made analyses of iron for the determination of phosphorus and other substances. He then gave evidence tending to show that he had made a duplicate analysis of samples of iron taken in his presence from the pigs produced by Mr. Arnberg, with the results appended to his name and stated in the table, Exhibit 13. His examination then proceeded as follows:

Q. Do you manufacture pig-iron in your establishment?
A. We do.
Q. From the ore?
A. From the ores.
Q. In doing so where does the phosphorus contained in the ore go?
A. Into the pig-iron.
Q. All of it?
A. Yes, sir; always make our calculations on the amount
254 of phosphorus in the pig-iron from the amount of phosphorus in the ore, cake, and limestone.
Q. None of it goes into the slag?
A. I never found any.
Q. What becomes of the slag in the manufacture of the pig?
A. It is thrown away.
Q. From your experience as any analytical chemist in making analyses of iron for phosphorus what would you regard as a fair limit of error in determining the amount of phosphorus?
A. In our works, where we want not over .1 of one per cent. to be in our pigs, I regard anything under .01 of one per cent. a fair duplicate analysis.
Q. Suppose two chemists are supplied with samples of the same iron—same pig—and carry on their separate, independent analyses, would it be possible, in your judgment, to have them both correct, both as to their methods and manner of manipulating, that one chemist should obtain, say, to exceed .040 and the other as
255 low [as] .024 to .028 from the same pig?
A. It would not be correct; somebody was wrong.
Q. Two much margin?
A. Yes, sir.
Q. From different pigs from the same lot of iron?
A. When were they cast? They may not have been out of the same ore.
Q. Cast, of course, out of the same ore; same cast.
A. It is too big a difference.
Q. Couldn't both have pursued correct methods?
A. They could not both be correct.

Cross-examination by Mr. WHEELER:

Q. What do you mean by the same cast?
A. Run out at the same time.
Q. The size of that cast would depend, of course, on the size of the furnace from which it was run?

A. Depend very much upon the furnace management.

Q. You would expect, then, that the character of each cast, so far as the elements of phosphorus and silicon were concerned, would be about uniform?

256 A. I don't say about silicon.

Q. You do as to phosphorus?

A. I do.

Q. As to the silicon you would naturally expect to find it would vary?

A. Yes, sir.

Q. Then I understand that it is the result of your experience phosphorus tends to diffuse itself more uniformly in cast-iron than silicon?

A. I examined a cast of iron particularly for the distribution of phosphorus, and all the difference I found between the first and last pig of the cast was .01 of one per cent.

Q. How did you find as to the silicon?

A. That would vary; sometimes in a cast of iron you may have what we term three grades—Nos. 1, 2, and 3.

Q. For what purposes do you make the classifications of the three grades?

A. When you are going to sell your iron the No. 1 iron is what we term an open iron, and in our Bessemer it is generally sup-

257 posed to be better; contains more silicon and contains less sulphur.

Q. How as to the No. 2?

A. That would contain a little less silicon, and, as a rule, would be a closer iron.

Q. Do you make this classification as the results of an analysis or from the stages of the process?

A. No, sir; that is made, and has been for years, I guess, before chemistry ever touched on iron—sold on those grades without regard to their chemical composition.

Q. How many tons would there be in a cast ordinarily at your furnace?

A. At our furnace we have as high as forty or fifty tons at a cast.

Q. Do you run this cast directly into the moulds in which the pig is made?

A. We have done it; we do not do so now always.

Q. That is often done?

A. That is usually done.

Q. In that way you can ascertain, by knowing the direction which the melted iron took, which of the pigs came from

258 the first run, which from the middle, and which from the latter part of the cast?

A. Yes, sir.

Q. Do you find that the quality of the iron varies according to the stage of the process at which each particular pig is produced?

A. Well, as regards silicon, there is a big difference. The furnace is tapped at the bottom, and that molten iron, of course, that comes out first would be from the bottom of the bath, and that

being so, it may have a higher specific gravity; it may be a little lower in silicon, while the top may be of a little lower specific gravity—might contain more silicon.

Q. Silicon is lighter than iron?

A. Pure iron would be heavier than a mixture. Wrought iron is heavier than pig-iron.

Q. What shape were these pigs from which you took borings?

A. They were flat, and my recollection is one of them was about a foot wide and maybe two and a half inches thick.

Q. What is made at your works?

259 A. Steel rails, and what we term low steels; boiler plates have been made, and spring steels have been made.

Q. Since you have been there?

A. Yes, sir.

Q. Do you, in all these cases, convert the pig at your works into Bessemer steel, or do you buy, in any case, the Bessemer steel for the purpose of making it into rails and springs?

A. Indeed I do not know. I think we have bought steel.

Q. That is not common; you usually make your own steel?

A. Yes, sir; make about 600 tons a day.

Q. Now, what do you find to be the limits—that is to say, the maximum and minimum—of the per cent. of phosphorus in the pig-iron that you buy for the purpose of conversion into Bessemer steel?

A. Our contract calls for .01 of one per cent.

Q. That was what you referred to in your direct examination with reference to the amount of variation that you would admit of?

260 A. A difference of .01.

Q. That is to say, your ordinary practice at your works, having a contract for pig-iron not to contain an excess of .1 of one per cent. of phosphorus, you consider that a variation from that of .01 of one per cent. is the greatest admissible limit of variation?

A. When they run over that their contract price is deducted for every .01 per cent. over .1 per cent.; when it is .110 the price is reduced; but if .109, .108, or .105, take no notice of it.

Q. What is the reduction on the price for each unit?

A. I do not know; that is not in my line.

Q. When the pig is delivered in pursuance of the contract at your works, it is analyzed in order to determine the per cent. of phosphorus?

A. Yes, sir.

Q. What do you find to be the usual variation in the pig you analyzed at your works, before its conversion into steel, in reference to the percentage of silicon?

261 A. Do you mean the different parts of the pig?

Q. No; I mean the different lots of pig.

A. That is about as big a variation as the weather in Pittsburgh.

Q. That you find to be very large?

A. Yes, sir.

Q. Silica is the scientific name for sand, is it not?

A. It is; for silicic acid.

Q. What effect does the presence of silica in that pig have in reference to its conversion into steel?

A. Silica or silicon?

Q. It always occurs in the form of silica, does it not?

A. No, sir.

Q. What effect does the silicon, in the form of silica, in the pig have in the process of conversion into steel?

A. It has no effect—the silica has not.

Q. What effect has the silicon?

A. The oxidation of the silicon to silica increases the heat of the metal.

Q. What is the character of that particular effect in reference to the product; is it beneficial or harmless or injurious?

262 A. Within limits we could not get along without that; that is why we use it. Pig metal melts at a certain temperature by oxidation of silicon to silica. The temperature of the bath is increased, and as pig-iron melts at a lower temperature than steel or wrought iron *why* this increase of temperature by the oxidation of silicon to silica keeps that steel or wrought iron liquid.

WILLIAM METCALF, a witness called on behalf of the defendant, *who* being first duly sworn, testified as follows:

Direct examination by Judge COUNTRYMAN:

Q. Mr. Metcalf, what is your business?

A. Manufacturer of crucible steel.

Q. How long have you been engaged in the business?

A. Sixteen years.

Q. In Pittsburgh?

A. Yes, sir.

Q. Have you purchased large quantities of iron in the pig?

A. Yes, sir.

Q. Foreign and domestic?

A. Yes, sir.

Q. And manufactured into what?

263 A. Manufactured it into crucible steel.

Q. It is used for what purpose?

A. Used for almost all purposes, from ordinary machinery purposes up to the finest tools, watch springs, clock springs, everything fine steel is required for.

Q. You are acquainted, then, with the various elements that are contained in the iron you use in the manufacture?

A. Yes, sir.

Q. Particularlyin regard to phosphorus, and know what its effect are upon the iron and steel?

A. All of the material that comes into our place is analyzed before it comes into use.

Q. What is the amount of phosphorus, or the percentage, I mean, of phosphorus, in the irons you purchase for the purpose of manufacturing it into crucible steel?

A. It varies considerably, but we try to keep it under .02.

Q. .02 per cent?

A. .02 of one per cent.

Q. You can state about what the limit of the variations are?

264 A. Well, for all tool steel purposes, if we know the iron contains over .03, we reject it; would not use it at all.

Q. How low does it run in the percentage?

A. Down as low as a trace .001 to .01; down to what is reported as a trace—not weighable.

Q. What is the effect of the phosphorus on the steel if you get a lot too large a percentage?

A. It is bad; it makes it weak.

Q. In what condition do you buy your material; do you buy it in any other shape than pig?

A. Yes, sir; the most of our material is bought in the shape of bar-iron; always buy on a guarantee or analysis, and we buy pig-iron the same way.

Q. In the process of manufacture what becomes of the phosphorus in the pig; does it pass into the steel?

A. We do not manufacture any pig directly into steel in the crucible process; all the pig we use is first puddled into wrought iron before making steel.

265 Q. In doing that does it pass into the wrought iron—the phosphorus in the pig?

A. It depends on circumstances. If you have ordinary Bessemer, which they call .10 phosphorus, you can take out one-half in puddling; if you have iron which contains .05 of one per cent. you can take out .01 — reduce it to .04, but if you have .04 you cannot take out any more by puddling. That is about the practical limit in puddling.

Q. Does that require any extra process in order to eliminate that amount in puddling?

A. No, sir—with care in puddling; it of course requires good work, care, to take it out.

Q. I suppose different manufacturers make different grades of steel?

A. Yes, sir; almost all steel makers have their own special brands and mixtures, which they keep to themselves. No two are exactly alike.

Q. The tendency and object of the manufacturer is to reduce the phosphorus as much as possible?

266 A. Yes, sir.

Q. The less phosphorus the better the steel is.

A. Yes, sir; always.

Q. Supposing you have an extra fine grade or quality of irons, finer than you care to use for some particular purpose, how is it valuable to you in the process of manufacturing it into steel?

A. I would use material of that kind by buying cheaper material and making a grade not so good.

Q. By mixing cheaper iron with it, so as to get it to the standard?

A. Yes, sir.

Q. Can you tell us about what the difference in value would be,

say — .01 *in* per cent. of phosphorous contained in the steel, when you get beyond .01?

A. I can give you a pig-iron manufacturer's idea of it in a case that occurred a few weeks ago. All the furnace people, as known to us here, make a great deal of Bessemer iron. The standard there is .10 phosphorus. That is the limit. We don't allow any
267 more. They offered us a lot of 500 tons, in which they said the phosphorus might run as high as .13 in some of it, but they would guarantee the average of the whole lot would not run higher than .11, and they offered it at half a dollar a ton lower than the market price. We did not accept it, and they made us a second offer, I think, at the same figure—a half a dollar below the market price. Afterwards, although the market had dropped a half a dollar a ton, and they were nearly .01 above the standard, they guaranteed the average not to be above .11—that is, within .01 of what they guaranteed—though the said some few pigs might be as high as .13.

Q. And you declined to take it?

A. We declined to take it. The standard is absolute in Bessemer, and we would not care to break over it.

Q. I suppose it is a great subject of rivalry to get below their opponents in getting a lower percentage of phosphorus in their steels?

A. I suppose that it is the object of every steel maker, sir.
268 We do not pretend to know what our neighbors are doing, but we all know that phosphorus is a bad thing, and the less we have of it the better.

Q. Have you stated what experience you have had in the manufacture of steel in the last sixteen years?

A. Yes, sir.

Q. I believe you limited your answer as to where the phosphorus went, as to wrought iron, in the manufacture of wrought iron; what becomes of the phosphorus in the manufacture of steel out of that?

A. It stays there.

Q. Does not eliminate?

A. No, sir; it all goes into the steel.

Q. Does it make any difference the amount of phosphorus in the material that you are using whether, as to the quantity of carbon and silicon also contained in the same material—in other words, if there is a larger relative quantity of carbon, silicon, and manganese, does that render it necessary to have a less amount of phosphorus?

269 A. Well, I think phosphorus is more injurious in high steel than in low. At the same time we don't like to have it in any.

Q. I will illustrate what I mean. Suppose the amount of phosphorus was to your ordinary limit, and then there was a larger relative amount also of carbon, silicon, and manganese, would that render it necessary to have a reduced amount of the proportion of phosphorus in order to use it at all?

A. That depends entirely upon the way you limit it. I will say it is more injurious in high steel than in low; high and low depends entirely on the amount of carbon in the steel; it is a technical term used in speaking of steel.

Q. In the process of manufacture is there any carbon absorbed in the steel in the process of fusing or otherwise?

A. There is in our business; yes, sir.

Q. Additional carbon?

A. Yes, sir.

Q. From what source does that come?

A. Oh, we put it in purposely; we have to regulate that
270 starting with the iron; we have to come up with the steel sometimes as high as one per cent. carbon; of course we have to put it in there.

Q. I mean, without any intention on your part, there is some additional carbon?

A. I suppose from our crucibles we get a small percentage always, but that is a relative uniform thing.

Q. You take that into account?

A. Take that into account; yes, sir.

Cross-examination by Mr. WHEELER:

Q. What part of the business of your firm do you attend to, Mr. Metcalf?

A. Just now I am attending to the works entirely; I have always been at the works here; you may call it the practical department, although Mr. Parkin is the practical man, and when he is here I am here with him all the time.

Q. Then you do actually have occasion in the course of your business, sometimes, to superintend the process of manufacturing?

A. Oh, yes; I have made it a study all the time; I have
271 been here to be ready to relieve Mr. Parkin, and just now he is away sick and likely to be some time.

Q. Your knowledge of the amount of phosphorus in the steel depends upon the report of the chemist?

A. Yes, sir—no, not altogether; we can tell it every time from handling it.

Q. From what do you determine, independently of the analysis, the proportion of phosphorus?

A. We determine it by the strength and quality of the steel; we can determine it very closely, and we never find, as a rule, any variation between our chemical test and the chemist's report; if we do find a difference both parties go over their work again.

Q. What mechanism do you have for that purpose?

A. We take steel of a certain standard and reduce it to a uniform standard and size, temper it, and then test its strength in that condition.

Q. What is the test you actually apply?

A. We tried it by breaking it and by examining the fracture, and by its strength.

272 Q. That has nothing to do with its tensile strength?

A. I do not know how much influence it would have in a straight pull in a machine.

Q. That is not the way you test it for the purpose of determ-ing the phosphorus?

A. No, sir.

Q. That test, however, you apply to steel, and not to iron before it is made into steel?

A. No; we always apply it to the steel.

Q. The steel that your firm makes at your establishment is all, or nearly all, of a much higher grade than rail steel, is it not?

A. You mean by higher grade better quality?

Q. Better quality.

A. Yes, sir; we buy, when our trade calls for steel of that quality, billets and simply work them down and sell it as such without any responsibility for its quality; we buy the steel, a great deal of steel of that quality, in that way; do not make it ourselves.

Q. What is the distinction between crucible steel and rail steel?

273 A. Crucible steel is a higher-priced steel, being more expensive in the manufacture, and of course it is made of better material in order to command the price in the market to make it.

Q. Crucible steel is so called because it is made in a crucible?

A. Yes, sir.

Q. Rail steel is made on open hearth?

A. On open hearth—all Bessemer—entirely.

Q. In either case a less expensive method of manufacture than that which you employ?

A. Yes, sir.

Q. And the whole object of all the improvements cheapening the production of rail steel has been to obtain a cheaper production when steel of less excellence is required for the purpose?

A. Yes, sir; less excellent, compared with crucible steel.

Redirect examination:

Q. You make a finer quality now than you did formerly of steel?

A. Yes, sir; I think the average standard of our steel is higher now than it was ten years ago, considerably.

Q. In other words, you are improving?

A. Yes, sir; trying to.

274 JOHN M. SHERRERD, being duly sworn and examined as a witness for the defendant, testifies—

"That he is a chemist in the employ of the defendant and has been in their employ since October 10, 1881. He further identified the samples analyzed by Sherred and Humphrey Browne, Chandler, and Ford, and the set secondly analyzed by Wirth and also the set secondly analyzed by Garrett and the set analyzed by Bertelet, all of which were taken from the three pigs produced by Arnberg in court, with the single exception of one of Bertelet that was made from the cubical block produced by Arnberg. He further testified that he had himself made analyses of the samples of iron taken from these three pigs produced by Arnberg and from the cubical block also produced by him, with the results appended to his name in the table Exhibit 13. He described the process adopted by him in making such analyses and gave his reasons for the same."

275 ROBERT W. HUNT recalled:

By Mr. COUNTRYMAN:

Q. At the same time as you have stated you sent borings to Mr Garret, at Philadelphia, did you send any to any other person?
A. Yes, sir; Dr. Wirth, of Pittsburgh.
Q. From the same samples?
A. The same samples given me by Dr. Wendel in the same way and at the same time.
Q. The same as you have stated in reference to those sent to Mr. Garret?
A. Yes.
Q. And mailed them to Dr. Wirth, at Pittsburgh?
A. Yes.

By Mr. WHEELER:

Q. When did you do that?
A. The same day. I recollect sending them at the same time as I sent to Mr. Garret in August, 1880.
Q. Do you mean that is what you testified to yesterday?
A. Yes, sir.
Q. That lot that you saw in the office?
A. Yes; they were given to me by Wendel.
Q. All you know about them was what Wendel told you?
276 A. Yes, sir; as I stated yesterday, he prepared them according to my orders and delivered them to me.

SELDEN E. MARVIN, being duly sworn and examined as a witness for the defendant, testifies:

By Mr. COUNTRYMAN:

Q. You reside in Albany?
A. I do.
Q. What is your position in this defendant company?
A. I am the secretary and treasurer of the company.
A. And have been for how long a time?
A. Since its organization the first day of March, 1875.
Q. Did you conduct the negotiations and correspondence with Mr. Lundberg in reference to the purchase of this lot of pig-iron?
A. I did.
Q. Do you recollect Mr. Lundberg coming to Troy in August, 1880, to see you in reference to that iron?
A. I do.
Q. Who was present at the time of the interview?
277 A. My impression is that Mr. Hunt was in his own room or in my room part of the time, passing through from my room to his room.
Q. Your rooms are right adjoining?
A. Yes, sir; conversation in one room can be distinctly heard in the other.
Q. The doors are open between them?

A. Yes, sir.

Q. You may go on and state what occurred between you and Mr. Lundberg on that occasion.

A. Mr. Lundberg at that time said that he came over to see if he could make a settlement of this iron matter in dispute between us. I said to him that I did not see (this is in substance the conversation) how any settlement could be made except upon the basis of our taking his iron at the same price as ordinary Bessemer iron; that we were greatly disappointed in it; that we had got it for a special purpose; that it had not met that purpose, and that we had just as good iron in our yards as this, and that any settlement that we should make we should have to make on the basis of the prices of Bessemer iron. I said that we had taken all the caution
278 that was possible; that we had had our own chemist, Dr. Wendel, make several analyses of it, and that his results were similar, one succeeding the other; that we had also satisfied ourselves of the accuracy of his results.

By Mr. WHEELER:

Q. This is what was said?

A. Yes, sir; this is the general conversation in substance; that we had satisfied ourselves of the accuracy of his results by having an analysis made by another chemist outside of the city of Troy, and that the results confirmed those of Dr. Wendel; therefore we were satisfied that the iron was not such iron as we had bought. Mr. Lundberg called my attention to Mr. Sharples' analyses, and I said that I did not think that Mr. Sharples had had sufficient experience in the analyzing of Bessemer pig-iron, ores, p. c., to make his results a good judge of such material. I asked him (and there is where I think Mr. Lundberg is mistaken) why he did not send samples to some other chemist of known repute and standing, and he asked me who there were and
279 I gave him the chemists of the different steel organizations, I think, without mentioning their names, and also the name of Booth, Garret and Blair, of Philadelphia. I said that they stood at the front rank of chemists making general analyses. Mr. Lundberg asked me if Prof. Chandler would not be good authority. I said if Prof. Chandler made the analyses himself I should consider that his results would be *that the results would be*—if he had kept up with the different changes going on and the different processes going on in the making of analyses that his results would be fair, but that he was in the habit of intrusting these analyses—the making of them—to his assistants and his students, and that we would not be governed by them; we had no confidence in them. I mentioned to him that we had had some trouble as the result of analyses made by him some few years before, and that we had lost all confidence in the certificates of analysis that came to us from that college.

Q. From Mr. Chandler?

280 A. Yes, sir.

Q. Did Mr. Lundberg, in that conversation, say to you that you might name any other chemist (in substance) than Dr. Wendel

to make an analysis of samples from this iron, and that he would submit or yield to the result which was ascertained?

A. I am very confident he did not, for I had in my possession at that time an analysis from another party that I would have been very glad indeed to have taken.

Q. You knew what the results of other chemists' analyses were?

A. I should have been very glad indeed to have accepted him.

Q. Are your letter-books here?

A. Yes, sir.

By Mr. WHEELER:

Q. You would have been willing to submit it to somebody who had already examined it?

A. I didn't say exactly that.

Mr. WHEELER: That is what you said, or that is one way of taking it.

By Mr. COUNTRYMAN:

Q. When you received these contracts from Mr. Lundberg that are in evidence, dated February 10 and 11, were these clauses
281 in the contracts referring to the analyses?

A. They were not.

Q. They were drawn up and signed by Mr. Lundberg without these clauses?

A. Yes, sir.

Q. And sent to you?

A. Yes, sir.

Q. What did you do?

A. I incorporated in the contracts the guaranty clauses as contained in his letter.

Q. They were written into the contracts in your handwriting?

A. Yes, sir.

Q. And you returned them to him?

A. Yes, sir.

Defendant's counsel read in evidence the following letters from the defendant to plaintiff:

I. TROY, N. Y., *June* 25, 1880.

Gustaf Lundberg, Esq., 38 Kilby street, Boston, Mass:

In our contract with you for purchase 800 tons Swedish charcoal pig-iron it was stipulated "said iron to be in accordance with an analysis furnished us in Gustaf Lundberg's letter of 6th instant," meaning February.

This analysis was as follows:

282 S B V E & N B B B K,	silicon	0.75
	Sulphur	0.02
	Phosphorus	0.024
NB G P H,	silicon	0.90
	Sulphur	Trace
	Phosphorus	0.03

Our chemist has just completed an analysis which shows—

	G P H	S B V E	N B B B K
Sulphur	0.008	0.012	0.016
Silicon	0.930	0.931	1.022
Phosphorus	0.047	0.042	0.049

Now, we bought this iron upon your analyses for an extra special purpose, & do not consider the iron, as per our analyses, to be up to the standard of what we purchased, as you will readily be convinced from a comparison of the analysis. We are receiving other iron as low in phosphorus as this shows from other parties, & there is too much variance in your iron to make it up to the standard of what we wanted to use it for. If you desire, you can send a chemist here to take a sample & have your own analysis made, or we will forward samples of each kind, as you may desire.

283 Very truly, SELDEN MARVIN.

II. TROY, N. Y., *June* 29, 1880.

Gustaf Lundberg, Esq., 38 Kilby street, Boston, Mass.

DEAR SIR: Yours 26th inst. received. The difference one way or the other in the amount of sulphur in the iron would not be so important to us as the phosphorus. We bought the iron on an analysis showing very low in phosphorus and cannot consent to take it upon our purchase unless it is to be in accord with the analysis.

Very truly, SELDEN MARVIN.

III. TROY, N. Y., *July 20th*, '80.

Gustaf Lundberg, Esq., 38 Kilby street, Boston, Mass.

DEAR SIR: I am just in receipt from our general superintendent and chemist of the following enclosure in reference to your letter
284 of the 3rd inst., which I referred to them for their consideration. Upon their recommendation I bought the iron for use for special purposes, & was very much disappointed when, in comparing the enalyses of our chemist with the analyses upon which the iron was purchased, to find such a variance. We have irons in our yard bought at very much less price that would answer for all practicable purposes the same as yours, which we had a right to regard as very much superior, & for that reason felt disposed to pay the superior price.

Please look over the communication and let me hear from you.

Very truly, SELDEN MARVIN.

IV. TROY, N. Y., *July 17th*, '80.

Gustaf Lundberg, Esq., 38 Kilby street, Boston, Mass.

DEAR SIR: A report should have been made to you some time ago in relation to the Swedish pig metal, but, owing to most annoying detentions & from break-downs in the Bessemer
285 dep't and pressure of work in the laboratory, the matter has been neglected. The metal received by us is not of so high a grade as represented by the analyses submitted to us by your office,

and on which we recommended the purchase. Presuming the analyses alluded to were accurate, we proposed using the iron for the manufacture of special steels of the very highest grades, and for purposes not supplied by Bessemer steel in this country. This we cannot do with the iron received by us. In forming our judgment of its quality we must be guided by our own analyses made from samples selected by ourselves and representing the whole shipment of metal, as previously reported to you. These show the iron far below that represented by the seller's analyses submitted to us. We find the iron no better for any purpose to which we can apply it than several brands of English iron which we have in stock and are daily receiving. Phosphorus was the element represented as being very low in quantity, & we find it twice as large as stated.

286 For our proposed purposes this is fatal. In regard to the analyses given us as being made in Boston, we must respectfully decline to attach importance to them, as they show on their face strong evidence of inaccuracy. Iron without sulphur and with only 0.005% phosphorus is an article not at present found in commerce. Further comment is unnecessary.

In conclusion, we would say that the iron can only be used for purposes equally well supplied by several other irons now in stock and of supposed inferior character—by Robert W. Hunt, gen'l supr.; A. Wendel, chemist.

Very truly, SELDEN MARVIN.

V. TROY, N. Y., *August 20th*, '80.

Gustaf Lundberg, Esq., 38 Kilby street Boston, Mass.

DEAR SIR: We are just in receipt of the analysis of the samples of your iron sent to an outside chemist of high repute & give you the result.

	Sulphur.	Phosphorus.
N B B B K	0.007	0.049
S B V E	0.005	0.044
G P H	Trade.	0.052

287 Fully corroborating the reports as made by our chemist and justifying the position we have heretofore taken. The iron is not what we bought and is not suitable for the purposes we purchased it. It is here subject to your order and to such charges as we may have been subjected to. What shall we do with it?

Very truly, SELDEN MARVIN.

VI. TROY, N. Y., *February* 3, 1881.

Gustaf Lundberg, Esq., 38 Kilby street, Boston, Mass.

DEAR SIR: Upon my return here from a few days' absence I find yours [of] 31st ult., in which you say you have given an order to Mr. Marcy for ten tons of your iron now in our yard. We will transfer same to him and render our bill for charges.

Very truly, SELDEN MARVIN.

VII. TROY, N. Y., *Feb'y 9th*, '81.

Gustaf Lundberg, 38 Kilby street, Boston, Mass.

288 DEAR SIR: We enclose bill of expenses on the lot of iron sent to H. S. Marcy, Albany, amounting to $6.30. The item of freight in this and the remainder of the lot now here subject to your order will be sent you when the iron is removed, unless you sooner desire it.

Very truly, SELDEN MARVIN,
P. G. H. O.

VIII. TROY, N. Y., *March 8th*, 1881.

Gusthaf Lundberg, 38 Kilby street, Boston, Mass.

DEAR SIR: We have delivered to Mr. C. B. Andrews 5 tons pig-iron in accordance with your order of the 26th ult., and beg to hand you herewith shipping receipt for same, together with our bill of charges, amounting to $4.35.

Very truly, SELDEN MARVIN.

IX. TROY, N. Y., *Aug. 9th*, '81.

Gustaf Lundberg, Esq., 38 Kilby street, Boston, Mass.

289 DEAR SIR: Yours [of the] 8 inst. received. In looking into the matter of your iron I find we received the following amount, "E. Kepler," & by the following barges of Warfreds, Robinson & Hennion:

Barge Coleman	455	16	2	12
Duryea	113	12	2	10
McClunn	193	18	1	16
Allen	51	5	1	12
	814	12	3	22
We have delivered upon your orders	810	17	1	13
Leaving a shortage of	3	15	2	9

For which we shall have to be responsible. I am informed by Mr. Dickson, in charge of our teaming at steel works, a small lot was used by some of our men without orders, they supposing it to be Spiegel. The error was not discovered until after the tests made of the conversion, when the steel was found worthless for use, & upon investigation it was found by mistake the men had taken this iron for Spiegel, the pile of the latter lying near, and Spiegel com-
290 ing in this form without the regularity of the cakes. I never knew this until this investigation. We paid freight upon this iron, 814 12 3 22, at 75 cts. a ton from New York.

Very truly, SELDEN MARVIN.

X. TROY, N. Y., *August* 15, 1881.

Gustav Lundberg, Esq., 38 Kilby street, Boston, Mass.

DEAR SIR: Yours 12th inst. received. We are confident the weights returned you by us are correct, inasmuch as this matter has hung

along so long, & it is a difficult matter to trace it from the dock to the barges and so on to Troy. We hand you herewith our check on Troy City National Bank for $306.45, in full payment for our relations to this lot of iron. Please receipt and return the enclosed with the annexed papers, and oblige—

Very truly, SELDEN MARVIN.

291 11. Gustaf Lundberg, agent for N. M. Höglund's Sons & Co., Stockholm.

38 KILBY STREET, BOSTON, *July* 29, 1880.

The Albany & Renselaer Iron & Steel Co., Troy, N. Y.

GENTLEMEN: Your favor of 23rd inst. was duly received. The pigs you sent have now been analyzed, and I enclose you the certificates, which show the phosphorous—the essential item with you—to be within the analysis on which the iron was sold. This being the record confirmation that the iron comes up to what it was represented to be, I can, under the circumstances, not admit the justice of your claim, & ask for your remittance, as per enclosed statement—the amount, $39,990.88—due to-morrow.

Your prompt attention will much oblige—

Yours very resp'f'y, GUSTAF LUNDBERG.

Certificate of Analysis.

No. 2396.

S. P. Sharples, State assayer, 114, State street, room 10.

292 BOSTON, *July* 29, 1880.

To Gustaf Lundberg:

The sample of pig-iron marked G P H received from you, submitted to me for examination, contains:

Sulphur	None
Phosphorus	0.027 %
Silicon	0.96 %

Respectfully, S. P. SHARPLES, *State Assayer.*

E. R. HILLS.

Certificate of Analysis.

No. 3278.

BOSTON, MASS., *July* 29, 1880.

To Gustaf Lundberg:

The sample of pig-iron marked NB B ^{BK} received from you, submitted to me for examination, contains:

Sulphur	None
Phosphorus	0.022 %
Silicon	0.95

Respectfully, S. P. SHARPLES, *State Assayer.*

E. R. HILLS.

293 *Certificate of Analysis.*

No. 2397.

BOSTON, MASS., *July* 29, 1880.

To Gustaf Lundberg:

The sample of pig-iron marked S B V E received from you, submitted to me for examination, contains:

Sulphur	None
Phosphorus	0.033 %
Silicon	0.900 %

Respectfully,

S. P. SHARPLES,
State Assayer,
E. R. HILLS.

12. Gustaf Lundberg, agent for N. M. Höglund's Sons & Co., Stockholm.

38 KILBY STREET, BOSTON, MASS., *July* 3, 1880.

Albany & Rensselaer Iron & Steel Company, Troy, N. Y.

GENTLEMEN: Acknowledging receipt of your favor of 29th ult., I have now obtained analysis on the pig-iron made by Mr. S. P. Sharples, State assayer, Boston, & submit to you his certificates enclosed; from these you will observe that the $^{N B B}$ B K & 294 G P H both contain less of sulphur, phorphorus, & silicon than the analysis on which the iron was sold; the S B V E on the other hand a trifle more of silicon & phosphorus, but no sulphur at all. As the quantity of S B V E cannot be large, compared to the whole 800 tons, being a part of the 300-ton lot, I trust the better analysis of the two other brands may serve as an offset.

Enclosed please find invoices for—

G P H, am't'g to	$23,922 34
S B V E & $^{N B B}$ B K, am't'g to	15,928 46
30 days	$39,850 80

At maturity please make check p'ble to order of Mess. Brown Bros. & Co., who have made advances on the ship't. Please excuse delay in rendering invoices, but I could not obtain the custom-house returns until to-day.

I remain, very resp'f'y,

GUSTAF LUNDBERG.

38 KILBY STREET, BOSTON, MASS., *June* 9, 1880.

The Albany & Rensselaer Iron & Steel Co., Troy, N. Y., to Gustav Lundberg, agent for N. M. Höglund's Sons & Co., Stockholm.

Check payable to the order of Brown Bros. & Co.
Terms cash, 30 days.

295 G P H, Swedish pig-iron.
Ex.: S. S. "Kepler."
Tons, 498 7 2 16, @ $48 D P, $23,922.34, gold

38 KILBY STREET, BOSTON, *June* 9, 1880.

The Albany & Rensselaer Iron & Steel Co., Troy, N. Y., to Gustav Lundberg, agent for N. M. Hoglund's Sons & Co., Stockholm:

Check payable to the order of Brown Bros. & Co.
Terms, 30 days.

S B V E and NB B B K. } Swedish pig-iron.
Ex.: S. S. "Kepler."
Tons, 331 16 3 12, @ $48 D P, $15,928.46, gold.

Certificate of Analysis.

No. 2325.

S. P. Sharples, State assayer, 14 State street, room 10.

BOSTON, MASS., *June 28th*, 1880.

To Gustaf Lundberg:

The sample of pig-iron marked G P H received from you, submitted to me for examination, contains:

Sulphur	None.
Phosphorus	.020
Silicon	.723 %

296 Respectfully, S. P. SHARPLES,
State Assayer.

Certificate of Analysis.

No. 2323.

BOSTON, MASS., *June* 30, 1880.

To Gustaf Lundberg, Esq.

The sample of pig-iron marked NB B B K, received from you, submitted to me for examination, contains:

Sulphur	None.
Phosphorus	.005 %
Silicon	.699

Respectfully, S. P. SHARPLES,
State Assayer.

Certificate of Analysis.

No. 2324.

BOSTON, MASS., *June* 30, 1880.

To Gustaf Lundberg, Esq.:

The sample of pig-iron marked S B VE received, submitted to me for examination, contains:

Sulphur	None.
Phosphorus	.041 %
Silicon	1.05 %

Respectfully, S. P. SHARPLES,
State Assayer.

297 13. Gustaf Lundberg, agent for N. M. Hoglund's Sons & Co.

38 KILBY ST., BOSTON, *Sept.* 2, 1880.

GENTS: In accordance with Gen'l Marvin's recommendation, I have had the borings of the pig metal analyzed by Prof. Chandler, of N. Y., & his certificate received to-day shows:

G P H	Phosphorus trace.
NBB B K	0.01
S B V E	0.01

The analysis being made in duplicate.

It would be highly gratifying if you would consider these analyses as conclusive that there must be some mistake in your tests.

Awaiting your favors, I am, very respectfully,
GUSTAF LUNDBERG.

Certificate of Analysis.

C. F. Chandler, Ph. D., 4th avenue, cor. 50th St., chemist and assayer.

NEW YORK, *Sept.* 27, 1880.

SIR: The three samples of pig-iron borings, marked "G P H" on outside, "S B V E" on inside, "S B V E" on outside, "G P H" on inside, and "N B B B K" on outside, same inside, sub-
298 mitted to me for examination, contain:

	G P H, outside. S B V E, inside.	S B V E, outside. G H P, inside.	N B B B K.
Sulphur	None.	None.	None.
Phosphorus	Faint trace.	Trace.	None.
Silicon	0.975%	1.113%	1.192%

The sulphur and phosphorus above are the results of three sets of experiments in each case.

Respectfully, your obedient servant,
C. F. CHANDLER, *Ph. D.*

To the Albany and Rensselaer Iron & Steel Co., 56 Broadway, N. Y. city.

14. Gustaf Lundberg, agent for N. M. Hoglund's Sons & Co., Stockholm.

38 KILBY STREET, BOSTON, MASS., *Feb.* 11, 1881.

Albany & Rensselaer Iron & S. Co., Troy, N. Y.

GENTS: I have yours of 9th inst., & enclose check for $6.30 in pay't of your bill 7th, which please acknowledge. The matter of freight may remain as you suggest until the whole lot is removed. I would, however, like to know what that charge will amount to per ton.

299 Yours truly. GUSTAF LUNDBERG.

15. 38 KILBY STREET, BOSTON, *July* 27, 1881.

The Albany & Renss. Iron & Steel Co., Troy, N. Y.

DEAR SIRS: I have given to Mr. C. B. Andros, fr't ag't, N. Y. C. R. R'd, an order on you for the balance of the G P H pig-iron, and will feel thankful if you will kindly see that same is promptly delivered, sending return of weight to my address here.

This delivery will complete the entire lot held by you, and on receipt of your bill for expenses I will remit check to balance same.

Yours very truly,

GUSTAF LUNDBERG.
JAS. J. KELLY.

Memorandum.

From Gustaf Lundberg.

38 KILBY STREET, BOSTON, *July* 27, 1881.

The Albany & Renss. Iron & Steel Co., Troy, N. Y.

300 D'R SIR: Please deliver to Mr. C. B. Andros, fr't ag't, balance of G P H Swedish pig-iron (about 375 tons), and oblige,

Yours truly, GUSTAF LUNDBERG.
J. J. K.

P. H. M.

Deliver all this brand to Hussey, Howe & Co., Limited, Pittsburgh, Pa., c. o. Alleghany Valley R. R. Co.

Mr. Andros will furnish cars as before.

G. H. O.

16. Gustaf Lundberg, agent for N. M. Hoglund's Sons & Co., Stockholm.

38 KILBY STREET, BOSTON, *July* 30, 1881.

The Albany & Renss. Iron & Steel Co., Troy, N. Y.

DEAR SIRS: I am in receipt of your esteemed favor of the 29th, with stated enclosures. I notice you have delivered, p'r boat "H. V. Lester"---------- 195 19 0 22
And p'r boat "Col. Parke"---------- 97 13 2 18

Total---------- 293 12 3 12

My order on you of the 19th inst. called for 317 tons, which, according to my books, was the weight of balance of S B VE
301 and NB B B K remaining in your hands. As there appears to be a difference of about 23½ tons, will you kindly advise me why the "Col. Parke" did not load the entire amount? The favor of your reply for return mail will oblige

Yours very truly,

GUSTAF LUNDBERG.
K.

17. 38 KILBY STREET, BOSTON, *August* 8, 1881.

Albany & Rensselaer Iron & Steel Co., Troy, N. Y.

GENTS: Enclosed please find check for $34.84 to pay your bills herewith. My account of weights of the pig-iron stands thus:

	T.						
Delivered you of G P H	498	7	2	16			
NB B B K & S B VE	331	16	3	12			
					830	4	2 0
	T.						
Del'd by you: G P H	500	2	3	7			
NB B K & S B VE	310	14	2	6			
					810	17	1 13
Short delivery					19	7	0 15

Will you please explain this discrepancy?

Yours truly,

GUSTAF LUNDBERG.

18. 38 KILBY STREET, BOSTON, *Aug. 12th*, 1881.

302 The Albany & Rensselaer Iron & Steel Co., Troy, N. Y.

DEAR SIRS: Your favor of the 9th inst. is at hand and noted. I am rather surprised at this late day to receive notice of my shortage on the pig-iron, and therefore cannot admit it. As further evidence that my weights were right I enclose return certified by the custom-house at New York.

I credit you for the freight, New York to Troy, a- 75 c., as stated, on 830 T 4 2 0=$622.67, and charge you with discrepancy in weight, say 19 T 7 0 15, a- $48 per ton—$929.12, and shall thank you for you- receipt in full and check for the difference—say $306.45.

Awaiting your reply,

Yours, very resp'y, GUSTAF LUNDBERG,
P'r JNO. J. KELLY.

N. Y. cert. No. 9326.

Memorandum of Weight of Merchandise Imported in St'r "Kepler" from Stockholm by G. Lundberg.

Marks & numbers.		Articles.	Gross.	Tare.	Net.
S B V E NB B B K G H P	‡ 7,200	centners pig iron	753 238	331 16	3 12
	12,000	" "	1,116 376	498 7	2 16

303 Certified from the weigher's dock book, on file in this office.

Custom-house, New York.

Surveyor's office, August 11th, 1880.

J. F. KANE,
Surveyor, C. E. N.

19. Gustaf Lundberg, agent for N. M. Höglund's Sons & Co., Stockholm.

38 KILBY STREET, BOSTON, *Aug.* 16, 1881.

Albany & Rensselaer Iron & Steel Company, Troy, N. Y.

GENTS: Yours of 15th inst. to hand enclosing check for $306.45 in payment of balance, as per statement rendered in my letter 12th Aug., for short weight & charges on the pig iron ex "Kepler," & for which I enclose separate voucher.

Yours, truly, GUSTAF LUNDBERG.

Troy, N. Y., August 15, 1881.

Albany & Renselaer Iron & Steel Company to Gustaf Lundberg:

Number of order.	Department.	Items.	Price.	Amount.
Our letter Aug. 9 / G. L. letter " 12	Bess. Steel works. / Iron acc't.	Swedis- pig iron, different P e a L brands, 19 7 0 15.	$48	929 12
Less freight paid N. Y. to Troy on 830 4 2 0			75	622 67
Balance				306 45

304 Rec'd payment.

GUSTAF LUNDBERG.

Boston, Aug. 16, 1881.

Defendant's counsel read in evidence the deposition of William Otto Wirth, taken under commission on behalf of the defendant, as follows:

The witness testified that he was an analytical chemist and had pursued that vocation since 1858; that he was familiar with the analysis of iron for the determination of phosphorus and other substances; that he made an analysis of the samples of iron taken in his presence from the three pigs produced by Arnberg before mentioned in 1882, with the results appended to his name in the table, Exhibit No. 13. He explained the process followed by him and his reasons for the same.

He further testified that he was a partner in a steel works and had long been employed as a chemist in steel works, and had often made analyses of iron containing less than .01 of one per cent. of phosphorus and sometimes as low as .004 of one per cent.;

305 that in smelting iron ore all the phosphorus in the ore and

in the limestone (flux) and fuel goes into the pig, and all limestone and fuel has more or less phosphorus.

His examination then proceeded as follows:

Q. What is the effect of phosphorus on iron?

A. It makes it cold short—that is, it doesn't bend well when cold; or, if it does bend, you cannot bend it back; we would never call iron with .05 of one per cent. phosphorus cold short; for many purposes it is very good; it is very different from iron, though that has only .01 of phosphorus.

Q. Illustate.

A. Take iron of .05 and convert it into tool steel; you cannot use it at all; it will be very brittle, and every pound you sell will be thrown back on your hands, while iron of .01 when made into tool steel, like the best English steel, is finest tool steel, and sells as high as forty cents per pound; the ordinary tool steel made here in Pittsburgh from Lake Champlain blooms contains about .025 phosphorus —will sell for only eleven cents a pound for same shapes and
306 sizes; this is high carbon steel. Now take soft steel. Horseshoe nails must be made from the very best material. A plate containing .20 is rejected for any purpose except for plow plates for the Southern trade. A plate of .10 phosphorus is called tank plate; is used for locomotive tanks, and is worth three cents a pound. When it has .04, everything else being the same, it is firebox iron or steel, and sells for six or six and a half cents a pound. The value is just double in the same proportion the phosphorus is reduced.

Q. What percentage of phosphorus is hurtful in steel for horseshoe nails?

A. The percentage should not be over .01; that is not made in this country; possibly a little may have been made lately.

Q. Is it frequent in iron and steel works to mix irons of different grades?

A. Yes; if they can get good iron cheap they mix it with inferior iron. Of course there are all grades. Iron with [a] small percentage of phosphorus would be more valuable to a man who made
307 lower grades by mixing, but if he has to pay so much more for it he wouldn't gain anything.

Q. Is it the tendency of manufacturers to improve their product?

A. Yes; they are improving all the time.

Q. Well, take up your analyses for sulphur; what were your results?

A. They were quite low; not enough to do any harm. The first 0.023, N B B B K; .018, G P H; .020, S B V E.

The witness, on cross-examination, testified that the pig-iron in controversy was known as No. 1 Bessemer, and was then asked the following question:

[Q.] How did the percentage of silicon you discovered in the borings affect the quality of the metal?

Defendant's counsel objected to this question as incompetent and

immaterial, because the plaintiff is bound by his warranty. Objection overruled. Defendant excepted.

A. Well, the metal is as low in silicon as it can be in iron which is so high in graphite. The lower the graphite in the iron and higher the combined carbon the lower you get silicon. You
308 can make it perfectly white, containing not one-tenth of one per cent. of silicon. The more graphite and less combined carbon the more silicon it takes up. You know that this is exceptionally low. As a rule, Bessemer iron contains from two to two and a half per cent.; very seldom they go lower than one and a half.

Q. In your opinion, the quality of the iron was not injuriously affected by this percentage of silicon?

Defendant's counsel made the same objection on the same grounds as last above. Same ruling and exception.

A. Not at all; I do not think anybody would object to it; neither would the sulphur affect the quality of the iron; you cannot get it much lower; the sulphur is so low that it does not injure it for any practical purpose.

Q. Did Mr. Sherred request you to make an analysis at a previous time?

A. Mr. Sherred did not; the Renselaer Iron and Steel Company did in 1880; there were three samples—may have been marked A,
B, C, or 1, 2, 3, but they were exactly the same; they said
309 they were Swedish iron; they did not say anything of a dispute, but just sent the samples and wanted me to analyze the samples, and I did; that was in December, 1880.

Q. Did you adopt the same process?

A. The same process, with the exception at the end I tested the precipitate again.

Q. What precipitate did you test?

A. The pyrophosphate of magnesia. In cases where the exactness is important you must test the precipitates after you weigh them, no matter how sure you are about it.

Q. Give us your results?

A. .047, .048, and .050.

Q. What were the letters?

A. They may have been A, B, C, or been 1, 2, 3.

WILLIAM OTTO WIRTH, being duly sworn and examined as a witness for the defendant, testifies:

By Mr. COUNTRYMAN:

Q. (Showing witness a paper.) Is that your certificate of the analysis which you made in 1880?

A. Yes, sir; No. 1, phosphorus, .076; No. 2, 050; No. 3, .048.

Q. You are not able to separate these numbers and identify
310 which was G P H and S B V E, &c.?

A. No, sir; I know nothing about that.

Q. Your deposition has just been read before you were called upon the stand to-day.

A. I heard that.

A. As the result of your experience as a chemist and in the manufacture of iron and steel, what do you say with reference to the manner in which phosphorus is distributed in iron made in the same cast?

A. From the same cast when it is run into pigs they are alike, and you may take each or any of those pigs and take borings and you will find the same amount of phosphorus not varying any more than any analysis would vary, even if it were made by the very best methods. They vary in the third and fourth decimal, but that would be no practical difference.

Q. How is it in the successive casts made right along, continuously?

A. That I cannot explain all at once in a few words, but that depends a great deal upon the kind of iron which is smelted in
311 furnaces. When you make ordinary iron merely for ordinary purposes—say such iron as is used for ordinary bar-iron or nails and which contains, say, half a per cent. and may be up to one per cent. of phosphorus—that varies a good deal. Successive casts may vary for the reason that those high phosphorus ores which people use in the manufacture of such iron vary much more than the low phosphorus ores, and because they do generally, and I may say always, use some cinder where they can get at it all, which varies greatly in phosphorus, and for that reason from one day to the other, even in successive casts, it may vary a tenth of one per cent.; one day it may be decimal 5 and next day it may be decimal 6.

Q. How is it as to low-phosphorus iron?

A. Here I can speak from experience. In Bessemer pig, where a certain figure is stipulated where it must be not over one-tenth, which is the highest figure allowed really, there it is very important that the ores must be regular, and some of my friends in
312 Pittsburgh make many thousand tons a year and sell to the Bessemer companies, and I have tested the pig metal every day for months, and it varied from .094 to .095, and one time I found it as low as .080, and I thought there was something wrong, and I telegraphed to the parties whether there was any change in the ore, and I found it had been done; that they substituted some low phosphorus ores for high phosphorus ores, and I could see it at at once, but for months it was always the same.

Q. About the same?

A. Now, when it comes to Swedish pig—low-phosphorus pig—the variation is even less, or should be less, than the Bessemer pig.

Q. In the Bessemer pig and Swedish pig would there be much variation in successive casts?

A. No; there would not be.

Q. What do you call a trace in speaking of phosphorus in steel and pig-iron?

A. A trace I call such a small amount that it cannot be
313 weighed, and it has no possible influence upon the quality of the steel—of any kind of steel.

Q. Would you call .04 of one per cent. a trace?

A. No, sir.

Q. Why not?

A. Well, as I did say in my analysis, if you take an iron which should only have .03 of one per cent. instead of .04 of one per cent. and use it for tool steel it will be sent back to you.

Q. In other words, a variation of one?

A. A variation of .01, when it comes to fine grades, is of great importance; when it comes to tool steel or any low carbons or to firebox iron or mail iron.

Q. Now, I call your attention to this article of Sergius Kern, of St. Petersburgh, shown to one of the witnesses examined before you on the question of distribution of phosphorus in iron. Will you please look at that?

A. I have looked at it, but, unless I know whether those analyses attached to it were made by Prof. Kern are correct, it means nothing; if they are no better than the analyses made by the Swedish Prof. Fernguist, who only got a trace in those pigs, they are of no value.

314 Q. You don't understand that Prof. Fernguist undertook to analyze the pigs that Sergius Kern speaks of?

A. No.

Q. Do you know Sergius Kern?

A. I do know who he is; he is at St. Petersburgh.

Q. What is his reputation?

A. I have seen some publications of his which I know are more than doubtful, and where, for instance, Fresenius, in his yearly report—well, he doubts it.

Q. You don't agree with him—that is clear?

A. Well, I will explain this matter of the distribution of phosphorus. There are better experiments than Sergius Kern's, which would vary much more, but you must take into consideration the circumstances under which they were taken.

The witness then gave testimony tending to contradict some of the conclusions testified to by Professor Chandler.

By the COURT:

Q. By such analysis as you have made in this case, how near do you think you can approximate to the quantity of phosphorus or the proportion of phosphorus in a quantity of eight hundred tons?

315 A. I only can tell by those borings which I get.

Q. I say, from such an experiment made on two or three pigs, how near would you be able to approximate to the percentage of phosphorus in the bulk of iron containing eight hundred tons?

A. As I say, when you take such low-phosphorus pigs it does not vary, the casts do not vary, and even successive casts vary but slightly, and when you have a few slabs you have very near the average of the whole lot; they may vary a few thousandths, but there cannot be a hundredth of one per cent. difference. I mean, instead of .024, which the guarantee was, it was .048.

By Mr. COUNTRYMAN:

Q. It cannot vary as much as from 24 to 48?
A. No; they cannot vary that much.

By the COURT:

Q. But might vary a few thousandths?
A. O, yes.

Q. Now, I wish to call your attention to a question which I will read to you from Prof. Chandler's testimony:

316 A contract for the sale of eight hundred tons of Swedish iron, of well-known brands, not yet manufactured, is made in February for shipment in May. A Swedish analysis is furnished and guaranteed. After the arrival in this country, the following analyses are made:

1. One set by Prof. Sharples, of Boston, from a set of pigs received from the appraiser at the New York custom-house.

2. Another set by Prof. Sharples' assistant from another set of pigs furnished by the defendant.

3. Then a determination by Mr. Mackintosh from mixed samples of two pigs of each brand, which samples consisted of borings made under the joint inspection of the defendant's chemist and the plaintiff.

4. A determination by Mr. Mackintosh from other portions of these samples.

5. A determination by Mr. Elliot from samples of the same brands furnished by the defendant.

6. A second determination by Mr. Elliot from other portions of the same samples.

317 7. An analysis of samples furnished by the defendant from each of these brands by Prof. Brown, of Easton, then an analysis of one of the brands by Mr. Shener.

2d. An analysis of each of them by Messrs. Humphreys & Sherred, of Scranton, Pennsylvania; 4th, by Mr. Ford, of Pittsburgh; 5th, by Mr. Wirth, also of Pittsburgh; all of these samples being furnished by the defendant.

Now, look at the table of the analyses as I have stated and answer the following question: To what extent, in your judgment, did the results of these analyses indicate a variation in the quality of the bulk of five hundred tons from that shown by the guaranteed analysis, which is also stated in the table?

Objected to by plaintiff's counsel on the same grounds as were stated to a similar question when offered by the plaintiff.

The COURT: I allow the same question as I allowed the plaintiff to put when he made the offer.

Defendant's counsel excepts to the ruling of the court upon the question as put.

318 Q. Assuming that all those analyses were correctly and properly made by competent chemists, what, in your judgment, would that indicate in regard to the whole bulk?

A. In the first place it is impossible to suppose anything like that, because there is no pig metal with traces or with no phosphorus—it is not known—nobody has never seen it or heard of it.

Q. You deny that it is true; but I am assuming now that it is a correct analysis.

A. It would prove that it was very irregular pig, and that when you have a thousand tons you don't know what you have.

Q. Assuming that the analyses are correct, as stated in this question, and that they show that there was a percentage of phosphorus in the iron varying from .039 to .052, would that indicate that at least one cast and possibly more of the entire bulk of iron were of that quality?

319 A. Yes, sir; as I say such low-phosphorus iron does not vary much; one cast is the same, and the successive casts will be alike; it is likely a good many casts may be .048 to .052 if they are all correct.

Q. So that several tons of this iron must be in accordance with these analyses, as stated, if the analyses are correct?

A. Yes.

By Mr. COUNTRYMAN:

Q. In using iron in steel works—three hundred tons and five hundred tons—with these analyses before you—on what assumption must you act in using that iron in the works?

A. I would use them in homeopathic doses if I had to take them, because you don't know how much of the high phosphorus and how much of the low phosphorus you have.

Q. Could you safely assume that any of the iron was less than the highest figures given in the analyses in using it?

A. I would take the higher to start with, so as to be on the safe side, and I would use very little of it.

320 Q. The question is, suppose five chemists analyzed borings from one of those pigs, and they reached five different results, varying from .048 of one per cent. to .052 of one per cent. as to phosphorus; now I ask whether, in your judgment, all of those analyses could be correct?

A. O, yes; there is a difference; they are not exact, but very near; there is only .004 of a difference; such a difference don't vary much in practice.

By the COURT:

Q. How far could they vary, in your judgment, and still be correct?

A. They should not vary more than three or four thousandths.

Q. What would be the effect of an excess of .01 of one per cent. of phosphorus above the limit or standard you wanted to make steel?

A. What kind of steel?

Q. Steel running from .01 to .04.

A. .01 would make a difference certainly; the finer the grade the more important the phosphorus is, and I explained that in my ex-

amination-in-chief, that you get double and treble the money when the phosphorus is reduced.

Cross-examined by Mr. WHEELER:

321 Q. The analyses made by different chemists called by the defendant, upon samples taken from this same pig of iron, vary as much as from .0419 to .0533; what do you say to that?

A. It was to- much of a variation if it was made from the same pig.

Q. It is what the witnesses have sworn to.

A. Somebody has got either too much or too little; it is perfectly clear it cannot vary that much; take the extremes.

GUSTAF LUNDBERG recalled.

By Mr. WHEELER:

Q. There has been a letter read in evidence, dated the 2d of September, 1880, in which you make the following statement (a letter written by you and addressed to the Albany and Rensselaer Steel Company); you say, "In accordance with Gen. Marvin's recommendation I have had the borings of pig metal analyzed by Prof. Chandler, of New York." To what recommendation do you refer?

(Objected to as reopening the case. Objection overruled. Defendant excepts.)

A. While we were conversing in Troy I spoke about different chemists.

322 Q. Did you receive any answer to that letter until the 30th of September, which letter of September is in evidence?

A. No, sir; not to my knowledge.

Q. Did you make any attempt between the two dates, by letter and telegram, to obtain an answer?

A. Yes, sir.

Q. Between the 2nd of September and the 30th of September?

A. Yes, sir.

Q. Was Mr. Hunt present at all the interviews between yourself and Gen. Marvin?

A. He was present—not all the time.

Q. Did Gen. Marvin state to you on that occasion, to the best of your recollection, that if Prof. Chandler would make an analysis himself and had kept up thoroughly with the times he would have confidence in it, but that he trusted to his assistants, and that he would not rely upon them, or words to that effect?

A. I don't remember that being said, but I remember that Gen. Marvin said that they would not take anybody'- else analysis but Dr. Wendel's.

Q. Who was it first named Prof. Chandler on that occasion—you or Gen. Marvin?

A. I can't say certain.

323 Q. Give us your best recollection?

A. I think it was Gen. Marvin.

Testimony closed.

Mr. COUNTRYMAN, of counsel for defendant: If your honor please, I ask the court to hold that the plaintiff upon all the evidence is not entitled to recover upon the third count or cause of action alleged in the complaint—that is, upon the claim for freight. I submit upon the undisputed facts which appear in the testimony and in the correspondence between the parties the plaintiff is precluded from any recovery on the claim for $652.15, and I ask your honor to so rule and decide.

The court declined to rule or decide as requested, and the defendant excepted.

Mr. COUNTRYMAN: I ask the court to direct a verdict for the defendant on the same grounds as stated upon like request at the close of the plaintiff's evidence, and also on the following additional grounds:

1. The plaintiff having been notified in June, 1880, that
324 the defendant would not accept the iron under the contracts, and the notice having been reiterated in July and in August, with the further notice at that time that the iron was in the defendant's yard subject to the plaintiff's order, the plaintiff's subsequent notice to the defendant in December, 1880, of resale was too late, and that in any event the plaintiff's subsequent sales of the iron, commencing in February, 1881, and ending in July or August, 1881, upon declining market, were made with unreasonable delay after the property had been rejected by the purchasers.

2. That the resales should have been made through regular brokers in the market and not by the plaintiff himself if he intended to make those resales on the defendant's account.

3. That the correspondence and acts of the parties while the resales were being made, and the adjustment of their claims and
325 counter-claims against each other, together with the payment of $306.45 by the defendant to the plaintiff, and the receipt by the plaintiff therefor on August 5, 1881, amounted to a rescinding of the contracts and the full settlement of all the claims arising under them—that is to say, as a matter of law.

The court denied the motion to direct a verdict in favor of the defendant. The defendant excepted.

Mr. COUNTRYMAN: Assuming that the jury shall find that there was due diligence in making the resales, if they find for the plaintiff, I ask your honor to hold that we are chargeable only with the difference between the contract price and the highest market price that was obtained upon the resales. Of course my idea is that we are not liable at all; but if the jury come to that question I think that that modification should be made. Of course we say that if the plaintiff intended to hold us the sales should have been made at once, and we claim that the first sale was not made in time.

326 The case was then summed up to the jury.

The learned judge then charged the jury, and, after calling the attention of the jury to the undisputed facts in the case, the charge continued as follows:

The iron was shipped in pursuance of this contract in May of that year and it arrived in New York in June, the 9th day of June being the date, I think, of its entry in the custom-house at this port. The defendant was immediately notified of its arrival, and soon thereafter it was sent by the defendant upon barges to the city of Troy, where is its general place of business.

The iron was taken there pursuant to the contract, but for the purpose of examination and analysis. An analysis was soon thereafter made by Dr. Wendel, the chemist employed by the defendant, who discovered, according to his analysis, that the iron was not in accordance with the contract—not in accordance with the analysis furnished with the contract.

The plaintiff was thereupon notified of the fact, and various
327 negotiations and correspondence took place between the parties and various analyses were made until the 16th day of November, when a final letter was sent to the plaintiff notifying him that the defendant declined to receive the iron under the contract.

It is contended on the part of the defendant that the notification was given prior to this date; that as early as June—certainly as early as the first of August—the plaintiff was notified that they would decline to receive the iron, on the ground that it was not in accordance with the analysis attached to the contract. It will be for you to say, upon the evidence, whether that version is correct; whether there was a determination upon the part of the plaintiff to abandon all claim against the defendant during that time; whether there was anything that amounted to an accord or satisfaction between them, or whether during the interval that elapsed there was an effort on his part to induce the defendant to receive the
328 iron, and whether the negotiations were still open and pending between the parties.

There is no dispute, however, that upon the 15th or 16th day of November there was a letter sent by the defendant to the plaintiff, which was so explicit in its terms that nobody could mistake it, finally refusing to receive the iron and to have anything more to do with the contract.

Now, the law is that within reasonable time after such notification the plaintiff was at liberty to take back the iron and sell it, and if he succeeds upon the main proposition he may recover the balance between the price that he received for it and the contract price. But I will refer again to this subject later on in the case. I only do so now to say that if you find that these negotiations were still open and pending—that there was no settlement and no abandonment by the plaintiff of the claim prior to the 16th of November—then his letter, which was dated on the 4th or 6th of December thereafter, notifying them that he would resell the iron on their account, was, according to the authorities upon this subject, a compli-
329 ance with the rule of law which required him to act promptly—that is to say that no unreasonable time elapsed between the refusal on the part of the plaintiff, if you find that their refusal was on the 15th or 16th day of November, and the date of his notification to them that he would proceed to resell the iron.

Now, it is a very well settled and familiar rule of law that in actions upon warranties no precise mode of expression is required—that is, if it can be ascertained from the contract what the intention of the parties was—what the one intended to sell and what the other intended to buy—it is precisely as much a warranty as if the vendor had used the precise words, "I hereby agree to warrant the quality of the material sold." And in this case, these analyses being attached to the contract or made a part of it by the terms of the contract, there was an explicit and express warranty upon the part of the plaintiff to sell to the defendant iron of the quality therein described.

330 And of course, gentlemen, suing upon this contract, the burden is upon the plaintiff to show that he himself has complied with the terms of the contract before he can hold the defendant for any breach of it. It is not all important what use the defendant proposed to make of this iron; whether the defendant proposed to make it into steel rails, steel blooms, or the finest kind of gun-barrels, that is of no sort of importance. The contract measures the rights of the parties. It is the final result of the negotiations between them, and, there being no ambiguity about it, the rights of the parties are to be determined by what they agreed to do; and the plaintiff, of course, is not required by this contract to furnish iron suitable for any particular purpose, but only to furnish iron in accordance with the agreement which he entered into with the defendant. There was no warranty on his part that the iron should be fit for a particular purpose, but simply that it should contain the amounts, as stated in the analysis, of various elements and ingredients.

331 And it is proper that I should say to you that this contract is to be construed not according to any technical rules of science, but according to the general principles of commerce, according to the principles of law, and according to sound common sense. It was a warranty not for any particular pig or cake of iron; the warranty related to the whole bulk in these two separate contracts respectively—that is, the whole bulk of five hundred tons in the one and three hundred tons in the other contract. Neither can it be said, in view of the testimony, which I think is reasonably clear, that the casts from these furnaces differed somewhat, although in minute degree, and of the other fact that no two of these analys*i*s which have been presented before you are precisely alike; that it was the intention of the parties that this warranty should be literally and actually carried out to a minute degree. It is not disputed in the case that if there had been a less quantity of these ingredients than

332 stated in the warranty there would have been no breach of the contract. Why? Because it is conceded with regard to the phosphorus that it is a dangerous element in iron, an injurious element, and therefore a less quantity than the *a* amount stated in the analysis would not affect it injuriously, but, on the contrary, would make it better; and so, by a parity of reasoning, it may be said that if the variation was so minute, so infinitesimal that it did not affect the quality of the iron for the purpose for which it was

to be used, then it must have been the intention of the parties, they being men skilled in the use of iron, and knowing, as doubtless they must have known, that no two analyses could be precisely alike, that the warranty was not to be literally, strictly, and exactly carried out.

Now, gentlemen, this is a somewhat delicate subject, and I do not wish to be misunderstood about it, and perhaps, by an illustration with regard to some of these other ingredients that have been mentioned here, I can show you more clearly what I mean. For instance, graphite or manganese. It is not seriously disputed, I think,
333 that if the quantity of these elements, as stated in the analysis, had varied it would not have interfered with the quality of the iron, and I simply mean to say that this contract is to be construed literally in one sense, but that if you find that the iron furnished was in compliance with the intention of the parties, and that there was no difference between the analysis accompanying the contract and the iron delivered which in any way affected it—which in any way made it worse or less saleable or less merchantable—then you have a right to say that there was a compliance with the analysis.

But the defendant had a right to require of the plaintiff that he should furnish iron in accordance with that contract, and he was not obliged to receive under that contract any different iron, no matter whether it was better or worse. He was not obliged to receive iron that was different in quality or texture from the iron mentioned in the contract. Certainly he could not be com-
334 pelled under this contract to receive any iron which was inferior in quality, even if it was in a minute degree inferior.

I want to reiterate what I have said, that we have nothing here to do with the negotiations between these parties, except as expressed in the contract. The plaintiff agreed to sell a certain kind and character of iron; that iron the defendant agreed to take and pay for, and, no other, and unless you find upon all the evidence of the case that the warranty was fulfilled and the contract complied with, then, gentlemen, there is no cause of action here against the defendant. If, on the contrary, you find that the warranty was fulfilled, and that the iron so furnished was in accordance with the terms of the contract, then you come to the question of what the damage is.

But, before proceeding to that question, I may say, as I think it is conceded by the counsel on both sides, that this question as to whether there was a breach of warranty or not centers itself upon the three elements, silicon, sulphur, and phosphorus, and the
335 case has been argued by counsel on both sides chiefly with reference to the one element of phosphorus, which, it is conceded by all, is an injurious element in all kinds of iron, making it less valuable and less saleable.

In one view of the case, what I have said with regard to the warranty would not be important, because I think there can be no doubt that if this iron differed as much as some of these various chemists say it did—that is, if it differed .02 of one per cent. or .03 of one per cent., which is the difference between some of the analyses on the

part of the plaintiff and nearly all the analyses on the part of the defendant—then there would be such a variation in the iron as would affect its quality so as to render it less valuable for the purposes for which it was intended, and then there would be a breach of warranty. I think there is no dispute upon that branch of the case; so that you must take all the evidence, take the various processes which have been described to you, which differ, I think,
336 mainly in the character of the acid used in the first instance to dissolve the iron, and the various stages of the process of analysis at which the several chemists stop, whether at one precipitate or at another precipitate—you must, I say, take these various facts and circumstances into consideration and then say, upon the whole evidence, who of these scientific men are entitled to receive consideration at your hands.

If, then, you come to the conclusion that this warranty was complied with, you will next consider the question of damages. If you say that it was not complied with, that is the end of the case, and the defendant is entitled to your verdict.

If the warranty was complied with and the defendant repudiated the contract and refused to pay the stipulated price, the plaintiff had two courses open to him. One was to leave the iron with the defendant and sue for the contract price, and the other was to take it himself, sell it as best he might, and sue the defendant for the
337 difference between the price obtained upon the resale and the contract price. The plaintiff here chose the latter, and, as I said *to* before, it was his duty, after he received notice that the iron would not be received by the defendant, to sell it within a reasonable time thereafter, and you are to say, upon the evidence, whether he did so or not. If you find that he did, then you must find further that he sold it fairly, honorably, and for a reasonable price—for the best price that the market afforded; and if you find that any of these sales were made for less than the iron was reasonably worth in the market—less than he could have obtained for it by diligence—then I think I will say to you that the defendant is entitled to have the whole iron that was resold by the plaintiff charged at the highest market price which he received; but you are to say, upon all the circumstances of the case, whether or not the plaintiff did use due diligence in disposing of it, and you will remember that the last of it was disposed of in August, 1881.

338 The difference between the contract price and the price which the plaintiff received upon the resale of the G P H iron, with interest figured up to this date, is $11,903.81. Upon the second contract, viz., the S B V E and the N b b B K brands, the difference, with interest figured to date, is $6,393.09.

There is also the item of freight from New York to Troy. If you find that it was necessary for the plaintiff to repay that sum to the defendant in order to obtain the iron, then he is entitled to recover that sum in addition, which amounts, with interest to date, to the sum of $688.46. Then there is evidence that the plaintiff was compelled to pay certain sums for brokerage, and that he used a good

deal of his own time in disposing of the iron, for which he has charged $751.65, making a total of $19,737.01.

By Mr. COUNTRYMAN:

We ask your honor to charge the jury that each of these contracts was an entire one, that each contract was entire for
339 the full quantity of pig-iron referred to in it, and that it was incumbent upon the plaintiff to furnish the entire amount called for by each contract of the quality required by the terms of the contract.

The COURT: I charge that.

Mr. COUNTRYMAN: We ask your honor also to charge that the defendant is not bound to receive any of the iron under either contract; that it is not bound to receive the entire amount covered by either contract unless it all answered in fact to the description or quality stated in the contract.

The COURT: I think I have charged that in substance, but I qualify it by saying that if there was an infinitesimal difference it does not necessarily avoid the contract. Generally the iron in each contract must be a fulfillment of the warranty.

Defendent's counsel excepts to the refusal of the court to charge as requested, and to the modification of the proposition as charged.

340 Mr. COUNTRYMAN: We ask your honor to charge that if the jury find that one cast of the iron in either of the brands of the iron produced by the defendant contained more phosphorus than the limit stated in the contracts, then that that was sufficient to justify the defendant in rejecting the same; that it having been testified that there was no material variation in the different pigs of the same cast, containing from ten to forty tons, and that there was no material difference between one cast and another cast from the same furnace, if the jury should find that one cast of the iron in either of the lots contained more phosphorus than the limit stated in the contract, that was sufficient to reject the entire lot under such contract.

The COURT: I think I shall decline to charge that further than I have charged; that the whole bulk must be in conformity with the warranty.

The defendant excepted to the refusal of the court to charge as requested, and to the modification of the proposition as charged.

341 Mr. COUNTRYMAN: We ask your honor to charge further than your honor has already charged, so as to be a little more definite upon one point. If the jury find either lot of iron differed as much as one one-hundredth of one per cent. in excess of the limit of phosphorus stated in the analysis referred to in the contract, that constituted a breach of the warranty and entitled the defendant to refuse to receive the iron.

Mr. WHEELER: If it differed as much as one one-hundredth of one per cent. then it is a material variation. We will concede that.

The COURT: I charge that.

Mr. COUNTRYMAN: We ask your honor also to charge, as matter of law, that five or six months' delay in making these resales, commencing some time in February, 1881, and continuing until July or August, 1881, was an unreasonable delay.

342 The COURT: I decline to say that, as a matter of law; I leave it for the jury to say whether, in view of all the circumstances of the case, it was or was not an unreasonable delay.

The defendant excepted to the refusal of the court to charge as requested, and to the charge of the court in that respect as made.

Mr. COUNTRYMAN, of counsel for defendant: We ask to have our exceptions noted to portions of the charge as follows:

1. We except to that portion of the charge in which your honor says, substantially, that the negotiations continued between the parties with reference to this iron from the time it was received, in June, down to about November 15, 1880, before the defendant gave the final notification that the iron would not be accepted or received under the contract.

The COURT: I do not think I stated that.

Mr. COUNTRYMAN: I wish to except to what your honor did say on that subject.

343 The COURT: I stated that there was a dispute as to what the negotiations were. That is what I meant to say, you contending that there was a refusal at an earlier date, and the plaintiff contending that the negotiations were not closed until that date.

Mr. COUNTRYMAN: Of course I can't give the language as your honor stated it, but I will ask to have an exception noted to what your honor said on that subject, and to the submission of that question to the jury we also except.

2. To what your honor said on the subject of the letter of Mr. Lundberg of December 4th or 6th, notifying the defendant that he should resell the iron on their account: we except to what your honor said on the subject of that notice, being within a reasonable time after we had refused to receive the iron.

The COURT: I did not say that; I said it was a reasonable time after the 15th of November, if they found that that was the date of the defendant's final refusal.

344 Mr. COUNTRYMAN: To what your honor said on that subject I also wish to except.

3. The counsel for the defendant excepted to that portion of the charge which states that it was not the intention of the parties that the contract should be carried out in minute degree, or that every pig or three or four pigs should agree with the warranty contained in the contract.

4. We also except to what your honor said on the subject, that if the jury found the iron was within the intention of the parties, as to phosphorus, unless it differed sufficiently from the contracts to render it unfit for the purpose desired, or less merchantable by reason of the difference—to what your honor said on that subject as being requisite in order to constitute a defense I wish to except.

The COURT: I do not think I said anything like that.

Mr. COUNTRYMAN: Then we wish to except.

5. To what the court said to the jury with regard to the
345 finding on the subject of freight and of commissions we wish to except to the submission of that to the jury.

The jury returned a verdict in favor of the plaintiff—

1. Upon the contract for five hundred tons for $8,929.55, with interest from August 24, 1881.

2. Upon the contract for three hundred tons for $4,951.48, with interest from October 3, 1881.

3. Freight, $622.67, with interest from August 6, 1881; total, $14,503.70; including interest, $15,969.34.

Interest was computed by consent of the parties in open court, before the verdict was recorded in the minutes of the court, the jury being present and assenting thereto.

And because none of the said exceptions so offered and made and the rulings and decisions of the said circuit judge do appear upon the record of said trial, therefore, on the prayer of the said defendant, by its said counsel, the said acting circuit judge hath to this bill of exceptions set his seal this 13th day of August, 1883.

ALFRED C. COXE, *Judge.*

346 Endorsed: U. S. circuit court, southern dist. of N. Y. Gustav Lundberg against The Albany and Rensselaer Iron and Steel Company. Bill of exceptions. Parker and Countryman, attorneys for defendants. Office and post-office address, cor. of State and Lodge Sts., Albany, N. Y. U. S. circuit court. Filed Aug. 16, 1883. Timothy Griffith, clerk.

347 *Stipulation.*

United States Circuit Court, Southern District of New York.

GUSTAF LUNDBERG
against
THE ALBANY AND RENSSELAER IRON AND STEEL COMPANY.

Stipulated that the clerk may insert in the bill of exceptions, as filed in this case, after the statement of the 4 grounds of the first request made after the plaintiff rested, to direct a verdict for the defendant, as follows: "The court denied the motion, and the defendant excepted."

Sept. 29, 1883.

(S'g'd) McDANIEL & SOUTHER,
Pl'ff's Att'ys.
PARKER AND COUNTRYMAN,
Def't's Att'ys.

Ordered accordingly.

(S'g'd) ALFRED C. COXE.

348 (Endorsed:) U. S. circuit court, S. D. of New York. Gustaf Lundberg ag'st The Albany and Rensselaer Iron and Steel Company. Stipulation.

349 U. S. Circuit Court, S. D. of New York.

GUSTAF LUNDBERG
against
THE ALBANY AND RENSSELAER IRON AND STEEL COMPANY.

Stipulated that the clerk may erase in the bill of exceptions as filed in this case the word "quantity" in the following question put by the defendant's counsel to the witness W. O. Wuth, on page 199: "To what extent, in your judgment, did the results of these analyses indicate a variation in the quantity of the bulk of 500 tons from that shown by the guaranteed analysis, which is also stated in the table," and insert in lieu thereof the word "quality."

Sept. 29, 1883.

(S'g'd) McDANIEL & SOUTHER,
Pl'ff's Att'ys.

(S'g'd) PARKER & COUNTRYMAN,
Def't's Att'ys.

Ordered accordingly.

(S'g'd) ALFRED C. COXE.

350 (Endorsed:) U. S. circuit court, S. D. of New York. Gustaf Lundberg against The Albany and Rensselaer Iron and Steel Company. Stipulation amending case.

351 Supreme Court of the United States. Of October Term, in the Year 1883.

GUSTAF LUNDBERG, Defendant in Error,
against
THE ALBANY AND RENSSELAER IRON AND STEEL COMPANY, Plaintiff in Error.

Afterwards, to wit, on the first Monday of October, in this same term, before the justices of the Supreme Court of the United States, at the Capitol, in the city of Washington, comes the said The Albany and Rensselaer Iron and Steel Company, by Parker and Countryman, its attorneys, and says that in the record and proceedings aforesaid there is manifest error in each and every of the following rulings and decisions, to wit:

352 1. The circuit court erred in overruling defendant's objections to and receiving such portions of the answers thus objected to by the witnesss O. Anderson to the eleventh, twefth, seventeenth, nineteenth, and twentieth, and to the whole of the eighteenth direct interrogatories, for the reasons set forth in such objections, respectively.

2. The circuit court also erred in overruling defendant's objection to and receiving the portion of the answer of the witness O. Anderson thus objected to to the fifth cross-interrogatory, for the reason there stated.

3. The circuit court also erred in overruling defendant's objections to and receiving the answers of the witness Bernard Fernquist to

the sixth, seventh, ninth, and thirteenth direct interrogatories
353 and the last sentence in the answer to the eighth direct interrogatory, for the reasons set forth in such objections, respectively.

4. The circuit court also erred in overruling defendant's objections to and receiving such portions of the answers thus objected to of the witness Harold Dillner to the 7th, 9th, 10th, 11th, and 14th and 18th and the whole of the answer to the 8th direct interrogatories, for the reasons set forth in such objections respectively.

5. The circuit court also erred in overruling defendant's objections to and receiving such portions of the answers thus objected to of the witness Harold Dillner to the 4th, 15th, 26th, and 29th cross-interrogatories, for the reasons stated in such objections respectively.

6. The circuit court also erred in overruling defendant's ob-
354 jections to and receiving the answers of the witness A. E. Cassell to the 7th, 8th, 10th, 16th, and 19th direct interrogatories, for the reason- stated in such objections respectively.

7. The circuit court erred also in overruling defendant's objections to and receiving the answers of the witness I. Johansen to the 12th and 20th direct interrogatories, for the reasons stated in such objections respectively.

8. The circuit court also erred in overruling defendant's objection to and receiving the answer of the witness Otto M. Hoglund to the 4th direct interrogatory, for the reasons there stated.

9. The circuit court also erred in overruling defendant's objections to and receiving the testimony thus objected to of the plaintiff as a witness, showing the means employed and the resales made by him of the iron in question, the prices obtained, the expenses incurred, and the range of prices in the market from the receipt of iron in America until the resales, for the reasons stated in such objections respectively.

355 10. The circuit court erred also in overruling defendant's objections to and receiving the opinions, conclusions, arguments, and testimony thus objected to of the witness Stephen P. Sharples for the reasons stated in such objections respectively, and in holding the same to be proper and competent expert evidence. Reference is here made to the answers to the questions numbered, respectively, 72, 73, 74, 75, 76, 78, 82, 83, 85, 86, and 87 in deposition read of the witness Sharples.

11. The circuit court also erred in overruling defendant's objections, and receiving the opinions, conclusions, agreements, and testimony thus objected to of the witness Charles F. Chandler for the reasons stated to such objections respectively, and in holding the same to be proper and competent expert evidence.

356 12. The circuit court also erred in declining to direct a verdict for the defendant as requested, for each of the reasons stated as the ground of the request at the close of the plaintiff's evidence.

13. The circuit court also erred in declining to rule and hold as matter of law that there could be no recovery on the contract for 300 tons of iron, because it appeared affirmatively from all the analyses

given in evidence that one or both of the brands of iron mentioned in such contract contained more silicon than is stipulated in the contract.

14. The circuit court also erred in sustaining plaintiff's objection to and excluding the testimony of the witness Alfred S. Bertolet offered by defendant to show the brand and result of analyses made by him for phosphorus November 13, 1880, as furnished to
357 him for that purpose by the defendant.

15. The circuit court also erred in sustaining plaintiff's objections to and excluding testimony of the witness, Robert W. Hunt, offered by the defendant to show the purpose for which defendant purchased the iron in question.

16. The circuit court erred also in overruling defendant's objections to and receiving the testimony of the witness, William O. Wuth, thus objected to, showing the effect of silicon on the iron in question.

17. The circuit court erred also in sustaining the plaintiff's objections to and excluding an answer to the question put by defendant to the witness, William O. Wuth, based on certain analyses, stated to him and asking him to what extent, in his judgment, such analyses indicated a variation in the quality of the bulk of
358 500 tons from that shown by the guaranteed analysis, as also stated to him.

18. The circuit court erred also in declining to rule, as matter of law, as requested at the close of the evidence, that plaintiff could not recover upon the third count or cause of action stated in the complaint for freight, and in submitting that question to the jury.

19. The circuit court also erred in declining to direct a verdict for the defendant at the close of the evidence, as requested, for the reasons there stated.

20. The circuit court also erred in declining to charge the jury, as requested, that defendant was not bound to receive any of the iron under either contract unless it all answered in fact to the quality stated in such contract, and also in qualifying the proposition by saying if there was an infinitesimal difference it does not avoid the contract.

359 21. The circuit court also erred in declining to charge the jury that if one lot of iron in either of the brands or lots in question contained more phosphorus than the limit stated in the contract that was sufficient to justify defendant in rejecting the same or the entire lot of which it formed a part.

22. The circuit court also erred in declining to charge the jury, as matter of law, that 5 or 6 months' delay in making the resales of iron was an unreasonable delay.

23. The circuit court also erred in submitting the question to the jury whether the parties continued to negotiate in reference to the iron down to November, 1880, before it was rejected by the defendant, and in all that portion of the charge relating to this subject.

24. The circuit court also erred in submitting to the jury whether plaintiff's notice of resale of the iron was given in a
360 reasonable time after it was rejected by defendant, and in all that portion of the charge relating to this point.

25. The circuit court also erred in charging the jury that it was not the intention of the parties to the contracts that the same should be actually carried out in a minute degree, and in the remarks made on that subject.

26. The circuit court erred also in charging the jury that it must have been the intention of the parties that the warranty was not to be literally carried out, and that if there was no difference between the iron delivered and the terms of the contract, which, if in any way affected it, made it more or less saleable or less merchantable, then the jury had a right to say that there was a compliance with the contract.

361 And the said Albany and Rensselaer Iron and Steel Company prays that the judgment aforesaid may be reversed, annulled, and altogether held for naught.

PARKER & COUNTRYMAN,
Attorneys for Plaintiff in Error.

(Endorsed:) Circuit court of U. S., southern district of N. Y. Gustaf Lundberg, def't in error, ag'st The Albany & Rensselaer Iron & Steel Company, pl'ff in error. Assignment of errors. Parker & Countryman, att'ys for pl'ff in error; office and post-office address, cor. of State and Lodge Sts., Albany, New York. (U. S. 362 circuit court. Filed Sep. 6, 1883. Timothy Griffith, clerk.)

363 Supreme Court of the United States.

GUSTAF LUNDBERG
against
THE ALBANY AND RENSSELAER IRON AND STEEL COMPANY.

Know all men by these presents that we, Erastus Corning and Selden E. Marvin, both of the city of Albany, in the State of New York, are held and firmly bound unto Gustaf Lundberg, of the city of Boston, in the State of Massachusetts, in the sum of thirty-three thousand five hundred and sixty dollars, his heirs, executors, and administrators; to which payment, well and truly to be made, we bind ourselves, and each of us, jointly and severally, and our and each of our heirs, executors, and administrators, firmly by these presents.

364 Sealed with our seals. Dated the 17th day of September, 1883.

Whereas the above-named defendant, The Albany and Rensselaer Iron and Steel Company, hath prosecuted a writ of error to the Supreme Court of the United States to reverse the judgment rendered in the above-entitled action by the circuit court of the United States for the southern district of New York in favor of said Gustaf Lundberg and against the said The Albany and Rensselaer Iron and Steel Company, for sixteen thousand seven hundred and seventy-seven dollars and fifty-seven cents, damages and costs, and which judgment was duly entered in the office of the clerk of the circuit court of the United States for the southern district of New York:

Now, the condition of this obligation is such that if the above-

named defendant, The Albany and Rensselaer Iron and Steel
365 Company, shall prosecute its said writ of error to effect and answer all damages and costs, including just damages for delay and costs and interest on the appeal, if it shall fail to make good its plea, then this obligation shall be void; otherwise to remain in full force and virtue.

(S'g'd) ERASTUS CORNING. [L. S.]
(S'g'd) SELDEN E. MARVIN. [L. S.]

Sealed and delivered in presence of—
(S'g'd) CLIFFORD D. GREGORY.

STATE OF NEW YORK, } ss:
Albany City & County, }

On this 17th day of September, 1883, before me, the subscriber, personally came Erastus Corning and Selden E. Marvin, both of the city of Albany, New York, to me known to be the same persons named in and who executed the above instrument, and to me they severally acknowledged that they executed the same.

366 (S'g'd) CLIFFORD D. GREGORY,
[NOTARIAL SEAL.] *Notary Public, Albany Co.*

STATE OF NEW YORK, } ss:
Albany City and County, }

Erastus Corning, one of the subscribers to the foregoing instrument, being duly sworn, says that he is a resident of the city and county of Albany and State of New York, and is a freeholder within this State, and is worth the sum of sixty-eight thousand dollars over and above all his debts and liabilities and besides his property by law exempt from execution.

(S'g'd) ERASTUS CORNING.

Subscribed and sworn to before me Sept. 17th, 1883.
[NOTARIAL SEAL.] (S'g'd) CLIFFORD D. GREGORY,
Notary Public, Albany Co.

367 STATE OF NEW YORK, } ss:
Albany City and County, }

Selden E. Marvin, one of the subscribers to the foregoing instrument, being duly sworn, says that he is a resident of the city and county of Albany and State of New York, and is a freeholder within this State, and is worth the sum of sixty-eight thousand dollars over and above all his debts and liabilities and besides his property by law exempt from execution.

(S'g'd) SELDEN E. MARVIN.

Subscribed and sworn to before me Sept. 17th, 1883.
[NOTARIAL SEAL.] CLIFFORD D. GREGORY,
Notary Public, Albany Co.

(Endorsed:) Supreme Court of the United States. Gustaf
368 Lundberg against The Albany and Rensselaer Iron and Steel Company. Bond on appeal. I hereby approve of the within bond as to its form and manner of execution and also to the sufficiency of sureties. Dated Buffalo, Sep. 20, 1883. (S'g'd) Alfred C. Coxe. U. S. circuit court. Filed Sep. 1, 1883. Timothy Griffith, clerk.

369 THE UNITED STATES OF AMERICA, *ss:*

To Gustaf Lundberg, Greeting:

You are hereby cited and admonished to be and appear at a Supreme Court of the United States to be holden at Washington on the second Monday of October, eighteen hundred and eighty-three, pursuant to a writ of error filed in the clerk's office of the circuit court of the United States for the southern district of New York, wherein The Albany and Rensselaer Iron and Steel Company is plaintiff in error and you are defendant in error, to show cause, if any there be, why the judgment in the said writ of error mentioned should not be corrected and speedy justice should not be done to the parties in that behalf.

Dated Utica, Sept. 5th, 1883.

ALFRED C. COXE,
United States District and Acting Circuit Judge.

370 [Endorsed:] E. & A. A., p. 423. U. S. Supreme Court. The Albany and Rensselaer Iron and Steel Company, plaintiff in error, against Gustaf Lundberg, defendant in error. Citation. Parker & Countryman, attorneys for pl'ff in error. Office and post-office address, cor. of State & Lodge Sts., Albany, N. Y. Due and personal service of the within citation is hereby admitted. September 7th, 1883. McDaniel, Wheeler & Souther, sol'rs for pl'ff. ——— ———, att'ys for def't in error. [Stamped:] U. S. circuit court. Filed Sep. 12, 1883. Timothy Griffith, clerk.

Endorsed on cover: S. New York C. C. U. S. No. 181. The Albany & Rensselaer Iron & Steel Company, plaintiff in error, *vs.* Gustaf Lundberg. Filed 19th October, 1883.

121-451

IN THE

Supreme Court of the United States.

OCTOBER TERM, 1886.

No. 181.

THE ALBANY AND RENSSELAER IRON AND STEEL COMPANY, PLAINTIFF IN ERROR,

against

GUSTAF LUNDBERG, DEFENDANT IN ERROR.

IN ERROR TO THE CIRCUIT COURT OF THE UNITED STATES FOR THE SOUTHERN DISTRICT OF NEW YORK.

BRIEF OF PLAINTIFF IN ERROR.

EDWIN COUNTRYMAN,
Of Counsel.

Hulshizer

Hulshizer

IN THE

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THE ALBANY AND RENSSELAER IRON AND STEEL COMPANY, PLAINTIFF IN ERROR,

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IN ERROR TO THE CIRCUIT COURT OF THE UNITED STATES FOR THE SOUTHERN DISTRICT OF NEW YORK.

SUPREME COURT OF THE UNITED STATES.

No. 181.

THE ALBANY AND RENSSELAER IRON AND STEEL COMPANY, *Plaintiff in Error*,

AGAINST

GUSTAF LUNDBERG, *Defendant in Error.*

STATEMENT.

Writ of error to the Circuit Court (fol. 1), from a final judgment in the action in favor of the defendant in error, as plaintiff below, and against the plaintiff in error, as defendant below, for the sum of $16,264.77 damages and $512.80 costs. (Fols. 63, 64.)

Action to recover the balance of the purchase-price of 800 tons of Swedish charcoal grey pig-iron, of certain brands and qualities, contracted to be sold and delivered in 1880 by plaintiff to defendant, at the city of New York (which, it was alleged, was wrongly rejected by defendant), after reselling the same in the market for the best prices that could be obtained; and also the expenses of such resales, freight, etc. (Complaint, fols. 10–32.) Defenses: 1. Denial of any contracts to purchase from plaintiff, and averments that he made the contracts as agent of N. M. Hoglund's Sons & Co., who were the real and only parties in interest adverse to the defendant, and the only proper parties plaintiff to the action 2. Denial of the contracts as set forth in the complaint; and averments that such contracts of purchase were made subject to certain analyses of the iron furnished by plaintiff as agent of N. M. Hoglund's Sons & Co., whereby they agreed to sell and defendant agreed to buy iron of the several qualities described in said analyses, and the plaintiff, as such agent, warranted that the iron was of the respective brands and qualities stated, and did not contain any other or different metals or substances in any larger quantities or proportions than as represented in such analyses;

whereas, it was found, by careful tests and analyses of the iron, that it was of much inferior quality, and contained much larger proportions of other metals and substances than as stated in the contracts, which rendered it unfit for the use for which it was purchased. 3. Averment of accord and satisfaction of the causes of action set forth as grounds of recovery. (Answer, fols. 35–54.) Tried at the circuit, commencing on the 27th day of April, and closing on the 4th day of May, 1883, before Hon. Alfred C. Coxe and a jury. (Fols. 56–62, 66.) Verdict in favor of plaintiff for the sum of $15,969.34. (Fols. 61, 345.) Judgment was perfected accordingly for $16,264.77 damages and $512.80 costs. (Fols. 63–65.)

LEADING FACTS.

The plaintiff, as "*agent* for N. M. Hoglund's Sons & Co., of Stockholm," Sweden, on the 10th day of February, 1880, at Boston, Mass., made a *written contract* with the defendant, whereby he "agreed to sell," and the defendant "agreed to buy the following Swedish charcoal grey pig-iron, viz.: 500 tons of brand N. B. G. P. H. at the price of forty-eight dollars, American gold, per ton, of 2,240 lbs., delivered on wharf at New York, duty paid; *said iron to be in accordance with an analysis furnished in Lundberg's letter of sixth of February.* Payment in gold in Boston or New York funds within thirty days from date of ship's entry at custom-house. Shipment from Sweden during the season, say May next, or sooner, if possible. The above quantity, hereby contracted for to be subject to such reduction as may be necessitated by natural obstacles and unavoidable accidents. The seller not accountable for accidents or delays at sea." (Fols. 67, 68.) The reference in the contract to the analysis, furnished in a prior letter of the sixth of *June*, as printed in the record, is either a misprint or a clerical error in copying the exhibit into the bill of exceptions. The name of the month should be *February* instead of June, and is so printed in the other contract contained in the record book. (Fol. 69.) This is evident also from the testimony of the plaintiff, and is undisputed. (Fols. 152, 154.) The *analysis* of this brand of iron, thus referred to and made a part of the contract, is as follows: "N. B. G. P. H. Phosp., .03 (three hundredths of one per centum), sulpher trace, silicon .90 (ninety hundredths of one per centum)." (Fol. 154.)

The plaintiff, as such *agent*, on the 11th day of February, 1880, made another written contract with the defendant, in nearly identical language, for the sale of "300 tons of brands S. B. V. E. & N. B. B. B. K.," at the same price. (Fols. 68, 69.) The analysis of these brands, as referred to and adopted in the contract, is as follows: "S. B. V. E. & N. B. B. B. K., carbon, .5 (five tenths of one per centum); graphite, 3.7 (three and seven-tenths per centum); silicon, .75 (seventy-five hundredths of one per centum); Phosp., .024 (twenty-four thousandths of one per centum); sulphur, .02 (two hundredths of one per centum); manganese, .684 (six hundred and eighty-four thousandths of one per centum). (Fol. 154.) These clauses in the contracts, referring to the analyses, were *inserted* by the *defendant* after they were drawn up by the plaintiff and before execution. (Fol. 281.)

The *contracts* recite on their face that the plaintiff acted as the *agent* of N. M. Hoglund's Sons & Co., and the same fact appeared in his *correspondence* with the defendant. Otto M. Hoglund and the plaintiff also testified, as witnesses, and it is an *undisputed fact* in the case, that N. M. Hogland's Sons & Co., were the *owners* of the iron, and that plaintiff was *merely their agent*, and never had any personal *interest* whatever in the *contracts* or in the *causes of action* set forth in the complaint, nor in the *suit*. (Fols. 140, 141, 150, 171, 172.)

The iron arrived in New York about June 9, 1880 (fol. 176), and it "took some time, two weeks or more, to get it up to Troy and to have an analysis made." (Fol. 177.) As soon as this was done, and it was found that the iron did not compare with the contracts, the results were communicated to the plaintiff. June 25, 1880, defendant's secretary sent the analysis made by its chemist to the plaintiff, showing that the amount of phosphorus in the brand N, B, G, P, H, was .047 instead of .03; and in the brands S, B, V, E, .042, and N, B, B, B. K, .049 instead of .024, as stated in the contracts. And the secretary added: "We *bought* this iron *upon your analyses* for an extra *special purpose*, and do *not* consider the iron, as per our analyses, to be up to the *standard* of what we purchased. * * * We are receiving other iron as low in phosphorus as this shows from other parties, and there is *too much variance* in your iron to make it up to the standard of what we *wanted to use it for*." (Fols 281, 282.) June 29, 1880, the

secretary again wrote to the plaintiff as follows: "We bought the iron on an analysis showing very low in phosphorus and *cannot consent to take it upon our purchase* unless it be in accord with the analysis." (Fol. 283.) The same information was reiterated in a communication to the plaintiff of July 20, 1880, with the reasons more at large why the iron could not be accepted. (Fols. 284–286.) August 20, 1880, the defendant sent to the plaintiff another analysis from "an outside chemist of high repute," confirming the prior analyses of its own chemist, and added; "The iron is here subject to your order, and to such charges as we have been subjected to. What shall we do with it?" (Fols. 286, 287.) Very soon after receiving the letter of August twentieth (fols. 177, 178), not later than the twenty-fifth, because he received the analysis of the "borings" he obtained at Troy from Prof. Chandler on the second of September (fol. 297), which he testifies was a week or ten days after leaving there (fol. 178), plaintiff went to the city of Troy and had a personal interview with the defendant's officers. He was then informed, as he himself testifies, "that they *refused* to receive the iron on account of its containing *more phosphorus* than the contract stipulated." (Fol. 166.) *He further* testifies that in that interview Mr. Marvin, the defendant's secretary and treasurer, who had made the contracts and always represented the defendant, "was *reiterating* all the time that he *would* not *take* the iron because it did *not* compare with his analysis." (Fol. 176.) The plaintiff, regardless of these refusals of the defendant to accept the iron, persisted in reiterating, from time to time, his demand of payment of the contract-price of the iron. (Fols. 291, 293, 294.) Finally, in answer to his last demand, made on the 13th day of November, 1880, the defendant, by letter of November fifteenth, reaffirmed all of their prior refusals as follows: "We are now prepared to say we cannot receive the iron upon our contract with you; this we have previously stated, and now beg to reiterate it." (Fol. 162.) December 4, 1880, the plaintiff mailed to the defendant the following letter: "As you have declined to accept and pay for the Swedish pig-iron mentioned in *your contracts with me, as agent for N. M. Hoglund's Sons & Co.*, dated February 10, 1880, and February 11, 1880, I give you *notice* that I shall *sell the iron* for your account and hold you responsible for the difference." (Fol. 72.)

The plaintiff afterward proceeded to resell the iron—not by placing it at once in the general market for sale in the usual way—but by retaining it as stock on hand in his private business, and selling portions of it from time to time in the line of his trade (fols. 161, 168, 158), commencing March 21, 1881, and ending October 3, 1881. (Fol. 159.) "The iron was offered in the regular way *to my regular customers*" (fol. 158), "to my *usual* customers—steel-makers principally and car-wheel makers." (Fol. 161.)

There was a *decline* in the market price of the iron of five or six dollars per ton, after November 15, 1880, before the resales were made the next year (fol. 169), or, as the plaintiff subsequently sought to modify his testimony in answer to leading questions, "between the summer and fall from the *arrival* of the iron" in June, 1880. (Fol. 170). The plaintiff testified that he could give the market prices of Swedish pig-iron by referring to his books, and promised to look, with the view of ascertaining the price on the 15th of November, 1880 (fols. 170, 171), but did not fulfil his promise. It also appears from the *return of sales* that the market further *declined* four dollars per ton from the time the *first* sale was made to that of the *last* sale. (Fol. 160.) Plaintiff also charged the defendant with *all expenses* of the resales as thus made, as well as for his own *services*. (Fols. 167, 168.)

"The actual *value* of iron and steel for use is largely dependent upon the amount of *phosphorus* contained in them. Swedish pig iron, for instance, which is the lowest in phosphorus, was worth thirty-five dollars a ton in the market, when ordinary Bessemer pig could be bought for twenty-two dollars a ton." (Fols. 252, 305–306.) "The defendant manufactured a very large variety both of iron and steel, the largest output in the shape of steel rails, but about 20,000 tons of merchant and *special steels* a year; and for such special purposes the extreme limit of phosphorus is .04, and they try to keep it *down* to .03 but .034 is their *usual formula*." (Fol. 244.) The effect of phosphorus in steel is to give it a *brittle* character, rendering it comparatively of little value; (fols. 219, 242, 264); and the *strength* of steel for *tempering* depends on the *minimum* of phosphorus. (Fols. 246, 266.) The phosphorus in the pig *cannot be eliminated* in the process of manufacturing steel, but *all* the phosphorus is *concentrated* in the smaller bulk. (Fols. 247, 253, 254, 268).

In manufacturing steel, the iron containing too much phosphorus can be mixed with that containing a less quantity, so as to obtain the standard desired. (Fols. 219, 236, 239, 250, 266.) And if analyses of different pigs of the same lot or brand should disclose a variation in the amount of phosphorus contained in them, it would be necessary, in using it, to assume that it all contained the highest percentage of phosphorus thus ascertained, as otherwise the product of steel might be rendered unfit for the purpose designed. (Fol. 250.) Phosphorus, silicon, carbon and manganese, are all considered hardening elements, and, therefore, in determining in a given case whether a certain amount of phosphorus is useful or detrimental, the amount of those elements must also be considered; and there may be a larger percentage of one when the percentages of the others are comparatively lower. (Fols. 240, 241, 245.) In making steel rails, boiler plates, springs and other lower grades of steel, in which as much as .1 (one-tenth) of one per cent of phosphorus is allowable, the extreme limit of variation in excess thereof is .01 (one-hundredth) of one per cent. (Fols. 254, 260.) In the same ratio, where the contract called for .03 (three hundredths) of one per cent, the limit of variation would be .003. (three thousandths) of one per cent, making the extreme limit .033; and where the contract called for .024 (twenty-four thousandths) the extreme limit would be .027 (twenty-seven thousandths) of one per cent. In the manufacture of *tool* steel, the effort is to keep the amount of phosphor under .02 (two hundredths) of one per cent; and if it exceeds .03 (three hundredths) it would be rejected and not used at all. Fols. 263, 264, 313.) The variation from the limit named in these contracts should not be more than .003 or .004 (three or four thousandths) of one per cent. (Fol. 320.) The tendency of the trade and the main object of the manufacturer is to *reduce* the phosphorous as much as possible. (Fols. 265. 273, 307.)

The principal question of fact litigated, therefore, on the trial, was whether the iron contained *more phosphorus* than the amounts stipulated in the contracts respectively, *i. e.* whether the N. B. G. P. H. brand contained more than .03 of one per cent and the two other brands more than .024 of one per cent. The plaintiff called five witnesses, Sharples, Hills, McIntosh, Elliott and Eaton, who had analyzed specimens of each brand of the iron. The results of their

analyses of N. B. G. P. H. varied from a "*faint trace*" (which is less than .0001 of one per cent, and such a small amount that it cannot be weighed (fol. 313) to .032 of one per cent; of S. B. V. E. from a "trace" to .045; and of N. B. B. B. K. from "none" to .028. But these variations and the extremely low figures of many of the analyses, would be sufficient to condemn them among scientific men as the results of carelessness or ignorance. "They should not (when made from the same pig) vary more than three or four thousandths of one per cent." (Fol. 320.) "There is no such thing as pig metal with mere *traces* or with *no* phosphorus — it is not known — nobody has ever seen or heard of it." (Fol. 318.) The defendant, on the other hand, called eight witnesses, not amateurs or chemists of little or no experience in this specialty, but persons whose particular employment had been for years to make daily and weekly analyses of these metals for the great iron and steel manufacturers of the country at Pittsburgh, Easton, Philadelphia and Crown Point; and the results of their analyses were as follows: Of N. B. G. P. H. the variations by the same method from the same pig were from .0419 to .046, and from different pigs by different methods, from .0419 to .0558; of S. B. V. E. from the same pig, by the same method, from .034 to .38, and from different pigs, by different methods, from .034 to .044; of N. B. B. B. K. from the same pig by the same method, from .0405 to .047, and from different pigs, by different methods, from .040 to .0503. (These figures are given in the table at page 78, and the sources of the material and methods of analysis are given in the testimony of each witness.)

The defendant had paid $622.67 *freight* on the iron from New York to Troy, and after the iron had been *rejected* by defendant as not in accordance with the contracts, a small portion of it was used by *mistake* by its employes, amounting to $929.12 at the contract price. The defendant accordingly (deducting the freight paid from the price of the iron thus used), delivered to the plaintiff $306.45 "in *full payment for our* (its) *relations to this lot of iron*," which he accepted. (Fols. 289, 290, 301–303.) Other facts are referred to more in detail under the several points.

Assignment of Errors.

1. The Circuit Court erred in declining to direct a verdict for the defendant as requested at the close of the plaintiff's evidence,

and again at the close of all the evidence. (Fols. 215, 323.) When the defendant in error, as plaintiff below, rested his case, the counsel for the plaintiff in error, as defendant below, moved the court to direct a verdict in his favor upon the grounds: (1.) That it was an undisputed fact that defendant in error, in making the contracts and in all the negotiations, acted as the *agent* of N. M. Hoglund's Sons & Co. (2.) It was also an undisputed fact that the iron in question was the property of N. M. Hoglund's Sons & Co., who were informed of the contracts and ratified them and shipped the iron in pursuance thereof for the plaintiff in error. (3.) The plaintiff in error was also informed by the correspondence, and on the face of the contracts that it was not dealing with the agent in his own behalf, but in behalf of his principal. (4.) The action cannot be maintained on the contracts by or in the name of the *agent*. The court *denied* the motion, and the plaintiff in error duly *excepted*. (Fol. 215.) The same request was made by the plaintiff in error, on the same grounds, at the close of the evidence, and again denied by the court, and an exception duly taken. (Fol. 323.) This was manifest error.

2. The Circuit Court also erred in sustaining the objections of the defendant in error and excluding the testimony thus objected to and offered on behalf of the plaintiff in error, of the witness, William O. Wuth, to show to what extent certain analyses read in evidence indicated a variation in the quality of the bulk of 500 tons from that shown by the guaranteed analysis in the contract, to which the plaintiff in error duly excepted. (Fols. 316, 317.) This was manifest error.

3. The Circuit Court also erred in charging the jury as follows: "And it is proper that I should say to you that this contract is to be construed, not according to any technical rules of science, but according to the general principles of commerce, according to the principles of law, and according to sound common sense. It was a warranty not for any particular pig or cake of iron; the warranty related to the whole bulk in these two separate contracts respectively—that is, the whole bulk of 500 tons in the one and 300 tons in the other contract. Neither can it be said, in view of the testimony, which I think is reasonably clear, that the casts from these furnaces differed somewhat, although in minute degree, and of the other fact that no two of these analyses which have been presented

before you are precisely alike; that it was the intention of the parties that this warranty should be literally and actually carried out to a minute degree." (Fol. 331.) The counsel for the defendant duly excepted to this portion of the charge. (Fol. 344.) This was manifest error.

4. The Circuit Court also erred in charging the jury as follows: "And so it may be said that if the variation (of phosphorus) was so minute, so infinitessimal that it did not affect the quality of the iron *for the purpose for which it was to be used*, then it must have been the intention of the parties, they being men skilled in the use of iron, and knowing, as doubtless they must have known, that no two analyses could be precisely alike, that the warranty was not to be literally, strictly and exactly carried out." "I simply mean to say that this contract is to be construed literally is one sense, but that if you find that the iron furnished was in compliance with the intention of the parties, and that there was no difference between the analysis accompanying the contract and the iron delivered which in any way affected it, which in any way made it worse or less saleable or less merchantable, then you have a right to say that there was a compliance with the analysis." (Fol. 333.) The counsel for the defendant duly excepted to this portion of the charge. (Fol. 344.) This was manifest error.

5. The Circuit Court also erred in declining to charge the jury as requested on behalf of the plaintiff in error, that "it was not bound to receive any of the iron under either contract unless it all answered in fact to the description or quality stated in the contract." "The Court—I think I have charged that in substance, but I *qualify it by saying that if there was an infinitessimal difference it does not necessarily avoid the contract.* Generally the iron in each contract must be a fulfillment of the warranty. Defendant's counsel excepted to the refusal of the court to charge as requested, and to the modification of the proposition as charged." (Fol. 339.) This was manifest error.

6. The Circuit Court also erred in declining to charge the jury as requested on behalf of the plantiff in error, "that if the jury find that as much as one cast of iron in either of the brands in question, contained more phosphorus than the limit stated in the contract it was sufficient to justify the defendant (plaintiff in error) in rejecting the same; that it having been testified that there was

no material variation in the different pigs of the same cast, containing from ten to forty tons, and that there was no material difference between one cast and another cast from the same furnace, if the jury should find that one cast of the iron in either of the lots contained more phosphorus than the limit stated in the contract, that was sufficient to reject the entire lot under such contract."

The COURT — "I think I shall decline that further than I have charged — that the whole bulk must be in conformity with the warranty. The defendant excepted to the refusal of the court to charge as requested, and to the modification of the proposition as charged." (Fol. 340.) This was manifest error.

7. The Circuit Court also erred in overruling the objections of the plaintiff in error and receiving the testimony thus objected to and contained in the answers of the defendant in error, Mr. Lundberg, as a witness in his own behalf, showing the means employed and the resales made by him of the iron in question, the prices obtained, the expenses incurred, and the prices in the market at the times the resales were made, because of the long delay. (1.) In giving notice of the intention to resell the property on account of the plaintiff in error. (2.) In subsequently making and completing such sales; and (3.) the manner of conducting and limiting such sales in his private business to his own regular customers. (Fols. 155–161, 167–170, 173, 176, 324, 325, 327–329, 341–343.) To each and all which the plaintiff in error duly excepted, as follows:

(*a.*) The witness was asked "whether or not the prices obtained were the fair market rates at the *time* he made the *sales*." The defendant's counsel objected to the evidence on the ground that "plaintiff was bound to determine at once what stand he would take — certainly, within a short time after being notified by defendant that it refused to accept the iron," and "that plaintiff was bound to put the iron upon the market at once." The court overruled the objection and defendant duly excepted. And under this objection and exception the witness proved the re-sales of the iron, commencing March 21, and closing October 3, 1881, all of the sales, except about twenty tons being in August and October, 1881; and also the prices and market rates at the times of such resales. (Fols. 155–161.)

(*b.*) The witness was also asked whether "in making these sales he incurred any expense, and if so, what?" The defendant's

counsel "made the same objection, on the same grounds as to the evidence of resales" last above, and "further that contrary to the usual custom he did not, with a view of getting prompt and best sales, hand the iron over to an indifferent broker, but insisted on carrying on the transactions himself on his private account." The objection was overruled and defendant duly excepted. Under this objection and exception plaintiff proved the expenses of such resales. (Fols. 167, 168.)

(*c.*) The witness was further asked "whether or not the prices he actually realized on the resales of the iron were the fair market prices as *stated* in the paper stating the account. This paper is Exhibit 9, containing the prices received at the *dates* of the resales (fol. 160.) The defendant's counsel objected to the evidence as immaterial and incompetent. The objection was overruled and defendant's counsel duly excepted. And the answer was that "they were." (Fols. 169–170.) These rulings were manifest errors.

8. The Circuit Court also erred in declining to direct a verdict for the plaintiff in error as requested at the close of the evidence on the further grounds there stated as follows: (1.) That the defendant in error having been notified in June, 1880, that the plaintiff in error would *not* accept the iron under the contracts, and the notice having been reiterated in July and again in August, with the further notice the last time that the iron was in its yard subject to the order of the defendant in error, his subsequent notice to the plaintiff in error in December, 1880, of resale on its account was *too late;* and in any event the subsequent *sales* of the iron by the defendant in error, commencing in February or March, 1881, and ending in July or August (in fact as late as October) 1881, upon a declining market, were made with *unreasonable delay* after the property had been rejected by the purchasers. (2.) That the resales should have been made through regular brokers in the *general market*, and not by the defendant in error in his *private* business if he intended them to be on account of the plaintiff in error. The Court denied the request, and the plaintiff in error duly excepted. (Fols. 324, 325.) This was manifest error.

9. The Circuit Court also erred in charging the jury as follows: "It is contended on the part of the defendant, that as early as June — certainly as early as the first of August — the plaintiff was notified that they would decline to receive the iron, on the ground that it was not in accordance with the analysis attached to the

contract. It will be for you to say, upon the evidence, whether that version is correct; whether there was a determination on the part of the plaintiff to abandon all claim against the defendant during that time;" "or during the interval that elapsed there was an effort on his part to induce the defendant to receive the iron, and whether the negotiations were still open and pending between the parties." (Fol. 327.) The defendant's counsel duly excepted to what the court said on the subject of "the negotiations continuing between the parties with reference to the iron from the time it was received in June to about November, 1880, before the final notification that the iron would not be accepted under the contract, and to the submission of that question to the jury." (Fols. 342, 343.) This was manifest error.

10. The Circuit Court also erred in charging the jury as follows: "If you find that these negotiations were still open and pending, that there was no settlement and no abandonment by the plaintiff of the claim prior to the sixteenth of November, then his letter, which was dated on the fourth or sixth of December thereafter, notifying them that he would resell the iron on their account, was, according to the authorities on this subject, a compliance with the rule of law which required him to act promptly; that is to say, no unreasonable time elapsed between the refusal on the part of the plaintiff (defendant), if you find that their refusal was on the fifteenth or sixteenth day of November, and the date of his notification to them that he would proceed to resell the iron." (Fols. 328, 329.) The defendant's counsel duly excepted to what the court said on the subject of the letters of Mr. Lundberg, of December fourth or sixth, notifying the defendant that he should re-sell the iron, as their account being within a reasonable time after its refusal of the fifteenth of November. (Fol. 343.) This was manifest error.

11. The Circuit Court also erred in declining to charge the jury as requested on behalf of the plaintiff in error, "that five or six months' delay in making the resales was, as matter of law, an unreasonable delay."

The Court: "I decline to say that, as matter of law; I leave it for the jury to say, whether, in view of all the circumstances, it was or was not an unreasonable delay." The defendant's counsel duly excepted to the refusal of the court to charge as requested,

and to the charge in that respect as made." (Fols. 341, 342.) This was manifest error.

12. The Circuit Court also erred in refusing to rule and decide, as requested by the plaintiff in error, that the defendant in error could not recover on the contract, dated February 11, 1880, as it appeared affirmatively, from all the analyses given in evidence, that one or both of the brands of iron, S. V. B. E. and N. B. B. B. K., therein referred to, contained *more silicon* than was stipulated for in the contract; to which the plaintiff in error duly excepted. (Fols. 216, 217.) This was manifest error.

13. The Circuit Court also erred in overruling the objections of the plaintiff in error and receiving the testimony thus objected to, as offered on behalf of the defendant in error, of the witness William O. Wuth, as follows: "Question. How did the percentage of silicon you discovered in the borings *affect* the quality of the metal? Defendant's counsel objected to this question as incompetent and immaterial, because the plaintiff is *bound* by his warranty. Objection overruled. Defendant excepted. Answer. Well, the metal is as low in silicon as it can be in iron which is so high in graphite." "Q. In your opinion, the quality of the iron was not injuriously affected by this percentage of silicon? Defendant's counsel made the same objection, on the same ground as last above. Same ruling and exception. A. Not at all; I do not think anybody would object to it." (Fols. 307, 308.) This was manifest error.

14. The Circuit Court also erred in overruling the objections of the plaintiff in error and receiving the testimony thus objected to as follows: The defendant in error having proved that in January, 1878 samples of pig iron marked G. P. H. were sent to the witness Feruquist, a Swedish chemist, for analysis (fol. 77), and that he made an analysis (fol. 93), he was asked on behalf of the plaintiff "to state the *process* of such analysis?" The witness proceeding to give the *details* of his process (which are not in themselves of any importance), the "defendants counsel raised the question and objected to the answer on the ground that it does not appear that the iron thus analyzed was part of the iron in question or iron from any of the same furnaces during the year this iron was made, and that it is immaterial to the issues here — it not being legitimate evidence bearing upon the quality of the iron sold by plaintiff to

the defendant; and that it is immaterial and incompetent to give evidence of such analysis in 1878." [Objection overruled. Defendant excepted.] Q. "If you made such analysis, state its results with reference to the percentage of phosphorus, sulphur and silicon respectively contained in the iron so analyzed by you? A. It contained .90 per cent. silicon, .028 per cent. phosphorus and a trace of sulphur." The same objection, ruling and exception as before was taken by defendant to this answer. (Fols. 94, 96.) This was manifest error.

15. The Circuit Court also erred in overruling the objections of the plaintiff in error and receiving the testimony thus objected to, of the witness Dillner, as follows: Q. "State what your means of knowledge are in regard to the percentage of phosphorus, sulphur and silicon in the iron sold and shipped to N. M. Hoglund's Sons & Co.? A. We have trustworthy analyses of the ores from the Pershytte mines and of pig iron from Pershytte furnace, which verify the always excellent quality of the ore and the pig iron manufactured of it." The defendant's counsel objected to all of the answer as hearsay, as giving the results of analyses made by chemists and not results within the personal knowledge of the witness. The court refused to reject the above portion of the answer, to which the defendant excepted. Q. "What was the percentage of phosphorus, sulphur and silicon contained in the iron sold and shipped to N. M. Hoglund's Sons & Co.?" A. "I do not know that there exists any special analysis of the pig iron now in question. It is not needed to have a special analysis made on every special parcel of pig iron that is sold from our blast furnaces, particularly, as is the case with pig iron now in question, when it is made exclusively from ores of Pershytte mines, on which, as well as on the pig iron manufactured from them, there already exist trustworthy analyses that bear witness to the pure and excellent quality of both the ore and the pig iron." Defendant's counsel objected to all of the answer, except the first sentence, as immaterial, as hearsay, and as a mere conclusion. Objection overruled. Defendant excepted. Q. "State whether or not the process employed by him (Fernquist), for such analysis was that employed in Sweden for the analysis of iron during the year 1878, and prior and subsequent thereto." A. "It does not beseem me to give a description of Mr. Fernquist's method of analyzing or its

details. But concerning his analyses, my own experience is that they are as conscientiously, as exactly made in full harmony with the progress of science." Defendant's counsel objected to all of the answer, except the first sentence, as immaterial and incompetent. The court refused to reject the last sentence above given in the answer, to which ruling and refusal the defendant excepted. The witness in answer to the final cross-interrogatory of the defendant attached to a commission issued on behalf of the plaintiff to take his testimony, whether he knew any other matter or thing favorable to the defendant, answered as follows: "My opinion is the 12,000 centner Pershytte pig iron (in question) is an article of most excel lent quality. In mercantile respect I have no right to say anything, nor can I do so, as I have no knowledge of either the price or other conditions." Defendant's counsel objected to the answer as not responsive, and as incompetent and immaterial, and declined to read it. Plaintiff's counsel proposed to read the first sentence of the answer. Objected to by defendant as hearsay, and as opinion and incompetent. Objection overruled and evidence allowed. Defendant excepted. (Fols. 104–109, 121, 122.) This was manifest error.

16. The Circuit Court also erred in overruling the objections of the plaintiff in error and receiving the testimony thus objected to of the witness, Capel, as follows: Q. "What was the percentage of phosphorus, sulphur and silicon contained in the iron sold and shipped to N. M. Hoglund's Sons & Co.? A. In the pig iron we made the percentage of phosphorus is about .02, of sulphur .02, and silicon is more varying, but it used to be about one per cent, and I think that the pig-iron in question contained about these quantities. Defendant objected to this answer, as opinion and hearsay. Objection overruled. Defendant excepted." Q. "State whether this quality has changed materially during several year's past, and if so, how? A. The quality of the ores has not changed materially during the past years. Defendant objected to the answer as hearsay and opinion. Objection overruled. Defendant excepted." (Fols. 125, 127.) This was manifest error.

17. The Circuit Court also erred in overruling the objections of the plaintiff in error and receiving the testimony thus objected to of the witness Sharples, as follows: Q. "I wish to present for your judgment the following case: Samples are taken from differ-

ent pigs of iron of the same lot of iron, and one analyzed by different chemists with the following results (giving the results of eight different analyses.) (Fol. 181.) In your judgment to what extent would the result of those several analyses indicate a material variance as to the quality and constituent parts of the bulk of the iron from which the samples were respectively taken from the following percentages: Silicon, .90; phosphorus, .03; sulphur, a trace? Objected to by defendant as incompetent and not within his sphere as a chemist. Objection overruled. Defendant excepted. A. I do not think that specimens taken from any one pig, on even ten pigs, would fairly represent a lot of 500 tons. Defendent further and specially objected to receiving this portion of the answer as mere inference on a matter not within the witness' knowledge or experience. Objection overruled. Defendant excepted. Witness continued. This iron being made in small lots, in all probability not exceeding thirty or forty tons to one casting, and the lot being made up in this way of several days' work, there are slight accidental variations in the working of the furnace, in the ores, and in everything connected with it that may change the character of the iron to a far greater extent than has been shown by these analyses which have been read." (Fols. 181–2.) Q. "State whether or not in your judgment these analyses indicate a material variation in the quality of the bulk of the iron from the quality which would be indicated by the analysis — for silicon, .90; for phosphorus, .03; and for sulphur a trace? Defendant's counsel objected thereto as immaterial, incompetent and not within his sphere as an expert, and also that the analyses mentioned have not been proved. Objection overruled. Defendant excepted. A. As I recollect the figures that you have given from the four chemists, the average will be very close to the last analysis quoted. Q. What is your judgment as to the materiality of the variation in reference to the quality of the bulk of the iron? Defendant's counsel objected on same grounds as before, and also because it involves a conclusion of law as well as a conclusion of fact. Objection overruled. Defendant excepted. A. The average being the same, I should not say there was any variation." (Fols. 183, 184.) Precisely similar questions were put, answered and received under the same objections and exceptions, in relation to the other two lots of iron contained in the contract for 300 tons, except that the

grounds of objection were stated more specifically as follows 1. There is no proof of these analyses, or of the method, or of the manner in which the methods were pursued by the different chemists. 2. As incompetent and immaterial. 3. It is not within the province of a chemist as an expert. (Fols. 185–189.) This was manifest error.

18. The Circuit Court also erred in overruling the objection of the plaintiff in error, and receiving the testimony thus objected to of the witness Chandler, as follows: "Q. To what extent, in your judgment, do the results of the analyses contained in the table you hold in your hand (referring to the table at page 78 of Error Book, down to the tripple lines, but not below them, as stated on the margin), indicate a variation in the quality of the bulk of 500 tons of the G. P. H. iron, and 300 tons of the two other brands, from that shown by the guaranteed analysis, which are also stated in the table — assuming that the table shown you correctly states the results, and that the analyses were made up by competent chemists?" The defendant's counsel objected to the question as incompetent, improper, and not a matter of opinion upon which a chemical expert can pass; that it is rather a question of experience, to be determined from the actual handling and using of iron, in the course of manufacture, by the manufacturers or persons in charge; that it is a question to be determined by the jury, and not by the witness, and that the witness is not shown to be competent to give an opinion on the subject. [Objection overruled; defendant excepted.] "Answer. Not to any extent." (Fols. 204, 210.) This was manifest error.

POINTS.

I.

The Circuit Court erred as alleged in the first assignment of error, in declining to rule as requested that the plaintiff, who was a mere *agent* of N. M. Hoglund's Sons and Company, could *not* maintain this action. (Fols. 215, 323.)

The *facts* bearing on this point are *undisputed*. The plaintiff in his *first* communication to the defendant of February 6, 1880, stating the *terms* of sale and containing the *analyses* afterward referred to in the contracts, distinctly *informed* the defendant that

he was acting as the "*agent* for N. M. Hoglund's Sons & Co., Stockholm." (Fol. 153.) Again, in *each* of the *contracts*, one of which was made four, and the other five days later (February 10 and February 11, 1880), it is *stated* that Lundberg, acted as "agent *for* N. M. Hoglund's Sons & Co., of Stockholm." (Fols. 26, 28.) The plaintiff himself, and Otto M Hoglund, testified that N. M. Hoglund's Sons & Co., of Stockholm, were the *sole owners* of the iron, and that the plaintiff was merely *acting* as their *agent* in the transaction. (Fols. 140, 150, 171.) It was also proven by the same witnesses, called on behalf of the plaintiff, that the contracts were immediately *reported* by the agent to his principals, N. M. Hoglund's Sons & Co., of Stockholm, and were *ratified* by them, who accordingly "*shipped* the iron expressly to fulfill these contracts." (Fols. 141, 171, 172.) The plaintiff further testified that he had no personal interest in the contracts—"*no interest* except *as agent* for the company, *acting* as their *servant*;" and had "no interest in this suit except as their agent to enforce these contracts if possible." (Fol. 172.) And the plaintiff, in his final *notice* of his intention to sell the iron on account of the defendant, dated December 4, 1880, refers to "your contracts with me me *as agent for* N. M. Hoglund's Sons & Co." (Fol. 72.)

The defendant availed itself of the *first* opportunity in the *answer* to interpose the objection, that the plaintiff was *not* the proper party to bring the action. It alleged "that the contracts mentioned in the complaint were in fact signed and made by and between the defendant of the one part and the firm or co-partnership of N. M. Hoglund's Sons & Co., of Stockholm, in the kingdom of Sweden, of the other part, the plaintiff *acting* merely as the *agent* of said firm in negotiating and making said contracts; that the said firm of N. M. Hoglund's Sons & Company were the *real and sole owners* of said iron, referred to in said contracts and in the complaint, at the time of the sale thereof, and are the sole owners of said *contracts* and of any and all claims and interests founded on or growing out of said contracts, and the plaintiff is *not* the owner thereof nor the *real party in interest* as the owner of such claims or otherwise, and he is *not* the proper party plaintiff to this action, and therefore ought not to have or maintain the same against the defendant." (See Answer, fols. 37, 38.) After proving on the trial the facts thus alleged, the defendant, at the close of the

plaintiff's evidence and again at the close of all the evidence, asked the court to *direct a verdict* for the defendant on the specific ground, among others, that "the action cannot be maintained on the contracts, by or in the name of the agent." (Fols. 215, 323.)

1. It has been frequently recognized in this court, as a well settled rule of the common law, that an *agent* who *discloses* the name and residence of his *principal* is *not* liable personally on a contract for the payment of money or the sale or purchase of movable property, and that the *principal* is the *only* person liable; and that the *principal* is also the *proper* person to bring an *action* on the contract against the opposite party.

Whitney v. Wyman, 101 U. S., 392.
Hitchcock v. Buchanan, 105 U. S., 416.
Metcalf v. Williams, 104 U. S., 93.
Post v. Pearson, 108 U. S., 418.
Mechanics' Bank v. Bank of Columbia, 5 Wheat., 326.
Baldwin v. Bank of Newbury, 1 Wall., 234.
Oelricks v. Ford, 23 How., 49, 64.

"Where the question of *agency* in making a contract arises there is a broad line of distinction between instruments under *seal* and stipulations in *writing* not under seal or by *parol*. In the former case the contract *must* be in the *name* of the principal and must purport to be his deed and not the deed of the agent covenanting for him. In the latter case the question is always one of *intent;* and the court, being untrammelled by any other consideration, is *bound* to give it effect. As the meaning of the law-maker is the law, so the meaning of the contracting parties is the agreement. Words are merely the symbols they employ to manifest their purpose that it may be carried into execution. If the contract be unsealed and the meaning is clear, it matters not how it is phrased, *nor how it is signed*, whether by the agent for the principal or with the name of the principal by the agent, or otherwise. The *intent* developed is alone material, and when that is ascertained it is conclusive. Where the principal is *disclosed*, and the agent is *known* to be acting as such, *the latter cannot be made personally liable* unless he agreed to be so."

Whitney v. Wyman, 101 U. S., 395, 396.
Hitchcock v. Buchanan, 105 U. S., 416.
Post v. Pearson, 108 U. S., 418.

And a *disclosure* of the principal is *unnecessary* in order to exonerate the agent where the other party has *prior knowledge* of the facts. "Where a person acts merely as agent of another, and signs papers in that capacity, that is signs them as agent, and the party with whom he deals has full knowledge of his agency and of the principal for whom he acts, an *express* disclosure of the principal's name on the face of the papers, or in the signature, is not essential to *protect the agent* from personal responsibility."

Metcalf v. Williams, 104 U. S., 93, 97.

"It is by no means true that the acts of agents derive their validity from professing, on the *face* of them, to have been done in the exercise of their agency. In the diversified exercise of the duties of a general agent, the liability of the principal depends upon the facts: 1. That the act was done in the exercise — and, 2. Within the limits of the powers delegated. These facts are necessarily inquirable into by a court and jury." "The question is, whether a certain act, done by the cashier of a bank (in this case signing a check in his individual name, where the name of the bank, however, appeared across the margin), was done in his official or individual capacity." "The *appearance* of the corporate *name* on the face of the paper at once leads to the belief that it is a corporate and not an individual transaction, to which must be added the circumstances that the cashier is the drawer and the teller the payee. The evidence on the face of the bill predominates in favor of its being a bank transaction. But it is *enough* to establish that there existed on the *face* of the paper, circumstances from which it might reasonably be *inferred* that it was either one or the other. In that case it became indispensable to resort to *extrinsic* evidence to remove the doubt."

Mechanics' Bank v. Bank of Columbia, 5 Wheat., 335–337.

So, "where negotiable paper is drawn to a *person* by name, with addition of cashier to his name, but with no designation of the particular bank of which he was cashier, *parol evidence* is allowable to show that he *was* the cashier of a bank which is *plaintiff* in the suit, and that in taking the paper he was *acting* as cashier and *agent* of that corporation." "Counsel very properly *admit* that such evidence *would* be admissible in suits upon ordinary *simple*

contracts, but the argument is that a different rule prevails where the suit is upon a promissory note or bill of exchange." "Banking corporations necessarily act by some agent, and it is a matter of common knowledge that such institutions usually have an officer known as their cashier. His acts, within the sphere of his duty, are in behalf of the bank, and to that extent he is the agent of the corporation. Viewed in the light of these well-known facts, it is clear that evidence may be received to show that a note given to the cashier of a bank was *intended* as a promise to the corporation, and that such evidence has no tendency whatever to contradict the terms of the instrument." "The principle is that the *promise* should be understood according to the *intention* of the parties. If, in *truth*, it be an undertaking *to* the corporation, whether a right or a wrong name is inserted, or whether the name of the corporation or some of its officers be used, it should be *declared on* and treated as a promise *to* the corporation, and as a general rule it may be said that where *enough* appears to show that the parties *intended* to execute the instrument in the name of the principal, the *form* of the words is immaterial, because as between the *original* parties their *intention* should govern." "Our conclusion is that the evidence is admissible, and that *the suit was properly brought in the name of the bank*."

Baldwin v. Bank of Newbury, 1 Wall., 234 239–241, 243.

"An objection has been taken that, inasmuch as it *appears* that the plaintiff was a resident of New York and the contract was made at Baltimore by an *agent*, the presumption of law is that the *credit* was given exclusively to the *agent*, the principal being the resident of a *foreign* State; and hence, that the contract, in legal effect, was made with the agent and not with the principal, and the *former* should have brought the *suit*." "It is, in all cases, a question of *intention* from the contract, explained by the surrounding circumstances, such as the custom or usage of the trade, when such exists." "In the present case, the broker's note, which is approved by the defendant affixing the firm name, is *too clear* upon the face of it to admit of doubt as to the *person* with whom the *contract* was made. The purchase is from 'J. W. Bell, agent for Benjamin Ford of New York,' and the case shows that Bell had full authority. The name of the principal is *disclosed* in the con-

tract, and the place of his *residence*, as the person making the sale of the flour, through his agent. This fixes the duty of *performance* upon him, and *exonerates the agent.*"

Oelricks v. Ford, 23 How., 64, 65.

"It is equally true, that if the agent enters into a contract in his own name *as principal*, he will be personally liable although the principal was disclosed to the other party; and in such a case parol evidence will not be admissible to *exonerate the agent.*"

Nash v. Towne, 5 Wall., 690.

But, on the other hand, although the principal was *not disclosed*, parol evidence of the agency will be received in order to *charge the principal*, or to enable *him* to maintain an *action* against the *other party* to the contract.

Ford v. Williams, 21 How., 287, 288.
N. J. Steam Nav. Co. v. Merchants' Bank, 6 How., 380, 381.
Salmon Falls Manuf. Co. v. Goddard, 14 How., 447.

"If a party is *informed* that the person with whom he is dealing is merely the agent for another, and *prefers* to deal with the agent *personally* on his own credit, he will *not* be allowed afterward to charge the principal; but when he deals with the agent, *without* any disclosure of the fact of his agency, he may *elect* to treat the after-discovered *principal* as the person with whom he contracted. The contract of the agent is the contract of the principal, and he may sue or be sued thereon, though *not named* therein; and notwithstanding the rule of law that an agreement reduced to writing may not be contradicted or varied by parol, it is well settled that the *principal* may show that the agent who made the contract in his own name was *acting* for him. This proof does not contradict the writing; it only explains the transaction. 'Such evidence does not deny that the contract binds those whom on its face it purports to bind, but shows that it also binds *another* by reason that the act of the agent is the act of the principal.'"

Ford v. Williams, 21 How., 289.

"The court (in such cases) look to the substantial parties in interest, with a view to avoid circuity of action; saving, at the

same time, to the defendant, all the rights belonging to him if the suit had been in the name of the agent."

N. J. Steam Nav. Co. v. Merchants' Bank, 6 How., 381.

"Extraneous evidence is admissible to show that a person whose name is affixed to the contract, *acted* only as an *agent*, thereby enabling the *principal* either to *sue* or to *be sued* in his own name; and this, though it *purported* on its face to have been made by the *agent himself* and the principal *not* named."

Salmon Falls Manuf. Co. v. Goddard, 14 How., 454, 455.

"The right of a party to maintain assumpsit on a promise not under seal, made to another for his benefit, is now the *prevailing rule* in this country."

Hendrick v. Lindsay, 93 U. S., 143, 149.

In a court of admiralty it has been held that a *consignee* of goods may *libel* the vessel for their non-delivery in his own name, *unless* there is something to *show* that he has *no interest* in them. The libellant "is the consignee named in the bill of lading; and, in the *absence of evidence* to control the effect of that document, the property is *presumed* to be in him."

Lawrence v. Minturn, 17 How., 100, 106, 107.

"The effect of a consignment of goods, generally, is to vest the property in the consignee; but if the bill of lading is special to deliver the goods to A *for the use of* B, the property *vests* in B, *and the action must be brought in his name* in case of loss or damage. If the person to whom the goods are ordered to be delivered, *is only an agent of the shipper, he has no property in them and cannot maintain an action against the master for not delivering them, nor for damage from negligence of the carrier.* And if the goods are shipped at the risk of the consignor, though the freight is payable by the consignee, the property remains in the former."

Grove v. Brien, 8. How., 429, 439.

Even if the rule in admiralty were also recognized by this court as applicable to an action at law (which is not the case) it would not relieve the plaintiff in the case at bar, as the *presumption*

of legal interest in the consignee *was overthrown* by uncontroverted evidence given on the trial by the plaintiff and the consignors themselves. The plaintiff was thus affirmatively proven to be a mere *broker* in the transaction; and his *relation* to the real parties in interest, as well as the *terms* of the contracts, so far as this question of agency is concerned, are precisely similar to those in a recent case decided in this court since the admiralty cases, and a case directly in point.

Oelricks v. Ford, 23 How., 49, 59, 64.

The same rule has always heretofore been recognized and enforced in the Circuit and District Courts of the United States, and in the Court of Claims.

The. A. Cheesebrough, 3 Blatch., 305,
Bank of Newbury v. Baldwin, 1 Clif., 519.
Thatcher v. Winslow, 5 Mason, 58.
Thompson v. U. S., 9 Ct. of Claims R., 188.

Per NELSON, J. "The position of the libelants (who had filed a libel to recover damages sustained from the refusal of the master of the vessel to receive a cargo) is somewhat singular. They insist that the contract was in their own names, and not as agents, for the purpose of maintaining the suit for an alleged breach of it; but that they had a right to ship the lumber in the name of their principal, and thus avoid any personal responsibility as respects payment of the freight. If they acted simply as *agents*, then they have *no interest* in the subject-matter of the suit, and *cannot* maintain it. If the contract was made in their own names and not as agents, then their refusal to *ship* in their own names furnishes a sufficient excuse for the conduct of the owner of the vessel."

The A. Cheesebrough, 3 Blatch., 307.

Per STORY, J.: "I take it *not* to be competent for a mere *agent* to maintain an action on a negotiable note in his hands, although it be with the consent of his principal. He must be the *owner* of the note or have some *substantial interest* therein. *Prima facie* indeed, the possession of such a note is evidence of the party's being a holder for a valuable consideration, and he is not bound to prove by other evidence that he is such a *bona fide* holder. But if it is *admitted or proved aliunde* that he is but a mere *agent* and holds the note as such, he is *not* competent to recover a judgment upon it in *his own name*."

Thatcher v. Winslow, 5 Mason, 58.

Per CLIFFORD, J.: "The only question presented is, whether the corporation plaintiff can be permitted to introduce evidence to show that the person named in the note (payable to O. C. Hall, cashier), in taking it, acted on its account, and not in his private capacity. Under recent decisions in this country it cannot be doubted that if the payee had been described in the note as cashier of the Newbury bank the suit would have been well brought in the name of the corporation." "On the face of the note it appears that O. C. Hall was cashier, and with the agreement superadded to what is written, I am of the opinion that the case must be viewed precisely as it would be if the words 'cashier of the bank of Newbury' had been written in the note; and on that state of the case no doubt is entertained that it would be competent for the plaintiff to prove by parol evidence that the cashier, in taking the note, was *acting* as cashier and agent of the corporation." "Between the *original* parties to a note or bill of exchange, the general rule appears to be that the facts are open to inquiry, and, consequently, that an *agent is not liable to be sued upon contracts* made by him in behalf of his principal, if the *name* of the principal is *disclosed* and made known to the person contracted with at the time of entering into the contract."

Bank of Newbury v. Balwin, 1 Clif. 520, 521.

"There is a further objection taken that the contract purports on its face only to be an agreement between the agent and the quartermaster, and not to bind the principals. But the cases authoritatively settle the fact that though the contract is made by the agent and though the name of the principal is not disclosed, nor even the fact that the agent is acting for another, still the *principal* may maintain the action in his *own name* and give parol evidence of his interest *dehors* the terms of the written contract."

Thompson v. N. S., 9 Ct. of Claims R. 198.

2. The same rule has always prevailed in the courts of New York.

Taintor v. Prendergast, 3 Hill, 72.
Kirkpatrick v. Stainer, 22 Wend., 244.
Beebe v. Robert, 12 Wend., 413.
Brockway v. Allen, 17 Wend., 40.
Pentz v. Stanton, 10 Wend., 271.
Haight v. Sahler, 30 Barb., 218.
Bellinger v. Bentley, 1 Hun, 562.

Green v. Skeel, 2 Hun, 485.
Moore v. McClure, 8 Hun, 557.
Gates v. Brower, 9 N. Y., 205.
Dykers v. Townsend, 24 N. Y., 57.
Coleman v. First National Bank, 53 N. Y., 388.
Briggs v. Partridge, 64 N. Y., 357, 358.
Hill v. Miller, 76 N. Y., 33.
Whitford v. Laidler, 94 N. Y., 145.
Knapp v. Simon, 96 N. Y., 284.

"The contract was made by the agent *without disclosing* the name of his principal, who was a merchant residing at Hartford, Connecticut. The agent was a resident of this State. The question is whether an action can be maintained by the *principal*. It may be admitted that whether the principal be considered a foreigner or not, his agent, *omitting* to disclose his name, would be *personally liable* to an action." "If the seller be kept in ignorance that he is selling to an agent or factor, I am not aware of a case which denies a *concurrent* remedy. On the other hand, I am still in want of an authority that, where an agent acquires rights in a course of dealing *for his principal*, whether the latter be *foreign* or domestic, and his name is kept secret, the *principal* may not *sue* to enforce those rights. I admit that the defendant is not by such form of action to be cut off from any equities he may have against the agent. *So far* the latter is considered as the exclusive principal; but *no farther*. As a general rule, the latter *cannot* maintain an action in his *own name* at all; and the *exception* will be found to arise from cases where he has the rights of *bailee* or some other *rights;* not the mere *powers* of a naked *agent*."

Taintor v. Prendergast, 3 Hill, 72, 73.

Where the agent of a foreign principal had been sued on a precisely similar contract, signed by the agent in his own name, as in the case at bar, the Supreme Court, per Ch. J. Nelson, said: "There can be no doubt a person acting as agent of a *foreign* house is *not* responsible individually if he *discloses* his principal and acts only in his behalf, any more than an agent of a house in this country. There is no such distinction to be found of any authority in the books, nor is there any reason to support it. If an individual desire the *personal* credit and liability of the *agent*, he should *make known* the fact, and all parties will then under-

stand it; if he declines, the vendor can refuse to deal with him." And on appeal the Court of Errors, affirming the judgment for the defendant, per Verplanck, Senator, said: "Until commercial convenience gives evidence to the contrary by express, universal and notorious usage, or unless where such usage can be specially proved to exist in some particular branch of business, it is safer and wiser to *adhere* to the general and ordinary law of agency, keeping the *known principal* responsible where the agent *discloses* his name and acts avowedly in his behalf; and leaving it to the discretion of the American trader to obtain the additional security of the factor or agent, or to give credit to him only, when he judges that to be the most for his own interest."

Kirpatrick v. Stainer, 22 Wend., 245, 247, 263.

"Where the name of the principal *appears* on the face of the instrument or contract, and it is evident that the agent did not intend to bind himself personally, but acted merely on behalf of the principal, if he acted by competent authority, the principal, and *not the agent*, will be bound."

Pentz v. Stanton, 10 Wend., 276.

"The principle is well settled that, if the agent possesses due authority to make a written contract, not under seal, and he makes it in *his own name*, whether he describes himself as agent or not, or whether the principal be *known or unknown*, his principal may be made liable, and will be entitled to sue thereon *in all cases*, and the instrument may be resorted to for the purpose of ascertaining the terms of the agreement."

Nicoll v. Burke, 78 N. Y., 583.

"It is very obviously true that an agent *may* make himself personally liable on a contract made for the benefit of the principal, and this he *will* do if he contracts in his own name, and his principal is *unknown*. But when the relation of principal and agent is *known* to exist, and the fact that the agent is acting solely for the benefit of such principal, the agent will *not* be bound unless the *credit* is given to him *expressly* and *exclusively*, and it was clearly *his intention* to bind himself personally."

Haight v. Sahler, 30 Barb., 224.
Bellinger v. Bentley, 1 Hun, 562.

An agent acting within the scope of his authority, and *disclosing* his agency will not be personally bound, except upon clear and *explicit* evidence of such an intention.

Hall v. Lauderdale, 46 N. Y. 70.
Butler v. Evening Mail Association, 61 N. Y. 634.

"The rule (that parol evidence is inadmissible to change a written contract) does not preclude a party who has entered into such a contract with an *agent* from maintaining an action against the *principal*, upon parol proof that the contract was made in fact for the principal, where the agency was *not disclosed* by the contract, and was *not known* to the plaintiff when it was made, or where there was *no intention* to rely upon the *credit* of the *agent* to the *exclusion* of the principal. Such proof does *not contradict* the written contract. It superadds a liability against the principal to that existing against the agent. That *parol* evidence may be introduced in such a case to *charge the principal*, while it would be inadmissible to *discharge the agent*, is well settled by authority."

Coleman v. National Bank, 53 N. Y. 393.

"It must now be deemed to be the *settled law* of this court that a *principal* may be *charged* upon a written parol executory contract entered into by an *agent* in his own name, within his authority, although the *name* of the principal does *not* appear in the instrument, and was *not disclosed*, and the party dealing with the agent supposed that he was acting for himself; and this doctrine obtains as well in respect to contracts which are required to be in writing, as to those where a writing is not essential to their validity. It is, doubtless, somewhat difficult to reconcile the doctrine here stated with the rule that parol evidence is inadmissible to change, enlarge or vary a written contract, and the argument upon which it is supported savors of subtlety and refinement. In some of the *earlier* cases the doctrine that a written contract of the agent could be enforced against the principal, was stated with the *qualification* that it applied when it could be collected from the whole instrument that the *intention* was to bind the principal. But it will appear from an examination of the cases that this qualification is *no longer regarded* as an essential part of the doctrine. Whatever ground there may have been originally to question the legal soundness of the doctrine referred to, it is now

too firmly established to be overthrown, and I am of opinion that the practical effect of the rule, as now declared, is to promote justice and fair dealing. There is a well recognized exception to the rule in the case of notes and bills of exchange, resting upon the law merchant."

Briggs v. Partridge, 64 N. Y. 362, 363.

"It is claimed because the instrument is under seal and *signed* by the defendants in their *individual names*, without the addition of their official title, that they have made themselves *personally* liable for the performance of the covenant to pay the rent reserved in the lease." "We think that neither upon principle or authority can this instrument be held to be the contract of the *individuals* who have signed it. No case has been cited, and we have discovered none, holding that in the absence of a personal promise or covenant, one *signing* a contract, who therein *represents* himself to be the agent of a *disclosed* and known principal, and who assumes to contract for such principal only, has been held personally liable upon the covenants contained in such contract."

Whittord v. Laidler, 94 N. Y., 148, 149.

"The effect of a purchase of property by an agent who does *not disclose* the name of his principal at the time of such purchase is to render the agent *personally liable* to the vendor for the purchase-price. The agent is under no legal or moral obligation to make such disclosure, and the *only* consequence of an *omission*, is to *create* a liability which he might *escape* by *informing* the vendor of the circumstances of his *agency* and the *name* of the *principal*.

Knapp v. Simon, 96 N. Y., 288, 289.

"An agent employed to sell goods on comission is a *mere broker*. As such he is authorized to make contracts for the sale and delivery of the goods, but is *not* authorized to make such contracts in *his own name*, nor to *receive payment* for the property so sold."

Dunn v. Wright, 51 Barb., 244, 250.
Harrison v. Ross, 12 J. & S., 230, 236; affirmed, 80 N. Y., 646.
Higgins v. Moore, 34 N. Y., 417.
Easton v. Clark, 35 N. Y., 225.
Bassett v. Ledener, 3 Thom. & Cook, 671, 675.
S. C., 1 Hun, 274, 279.

"The general rule is that the action should be brought in the *name* of the party whose *legal interest* has been affected against the party who *committed* or caused the injury."

Beebe v. Robert, 12 Wend. 417.
1 Chitty on Pleadings, 1.

And it has always been held in New York that a *mere agent*, not having any beneficial interest in a contract, *cannot* maintain an action upon it in his own name. Before he can do so he must prove that he has made *advances* upon the goods sold or has *guaranteed* the sale to his principal.

Gunn v. Cantine, 10 Johns 387.
Bayley v. Onondaga, etc., Ins. Co., 6 Hill 476.
White v. Chouteau, 10 Barb. 202.
Green v. Clarke, 12 N. Y. 343.
Thompson v. Fargo, 49 N. Y. 188.
Price v. Powell, 3 N. Y. 322.

"Where a contract *purports* on its face to have been made by or with an *agent*, having no direct or beneficial interest in the transaction, the *suit must* be brought in the *name of the principal*, as the contract is, in legal effect, made with him, and not with the agent."

Bayley v. Onondaga, etc., Ins. Co., 6 Hill 477.

"The principal may always sue upon the contracts made by his agent, though he was *not known* to the other party, at the time the contract was made, as the principal, unless the agent contract in his own name under *seal*. An *agent* can sue upon a contract when he has a *beneficial interest* therein, or a *special* property in the thing sold. In *all* cases the agent's right to sue depends upon the non-interference of the principal; *he* can come forward and sue in his own name, in *exclusion* of the agent's right of action, unless the contract was under seal." "The question must be governed by the consideration, in whom the *legal title* was vested; for *he* is the person who has sustained the *loss*, if any, by the negligence of the carrier, and whoever has sustained the loss is the proper party to call for compensation from the person by whom he has been injured."

Green v. Clarke, 12 N. Y., 351, 352.

"In this case the plaintiff *never owned* the money ordered to be sent to the consignee, and had no *special* interest in it. He was a

mere agent. The action was brought and tried upon the assumption that the plaintiff properly collected and sent the money due from the government to the Whites. Hence, if he simply fulfilled the orders of the owners, and sent the money to the consignee by a suitable and proper conveyance, his duties and liabilities were discharged. He then had *no further* right or *interest* in the matter." And it was accordingly held that he could not maintain the action to recover of the carrier.

Thompson v. Fargo, 49 N. Y., 191.

"Although the consignee is the *presumptive* owner of the property shipped, it is a presumption, which may be, and which was sufficiently *rebutted* in this case. The property was not *consigned* to Hotchkiss as owner, but as the *agent* of the plaintiffs, who were the *owners* of the property at the time of the alleged injury by the carriers." "As the plaintiffs were *owners*, the suit was properly brought in their names. And as Hotchkiss was but an agent, he had *no interest* in the event of the suit, and was a competent witness for the plaintiffs."

Price v. Powell, 3 N. Y. 325.

3. The rule is the same in other States and in England.

Huntington v. Knox, 7 Cush., 371.
Eastern Railway Co. v. Benedict, 5 Gray, 561.
Bank of B. N. A. v. Hooper, 5 Gray, 567.
Williams v. Bacon, 2 Gray, 387.
Lerned v. Johns., 9 Allen, 419.
Hunter v. Giddings, 97 Mass., 41.
Chipman v. Foster, 119 Mass., 189.
Cutler v. Ashland, 121 Mass., 588.
Goodenough v. Thayer, 132 Mass., 152.
Byington v. Simpson, 134 Mass., 169.
Garland v. Reynolds, 20 Me., 45.
Simpson v. Garland, 32 Me., 40.
S. C., 76 Me., 203.
Koulback v. Churchill, 59 N. H., 296.
Johnson v. Smith, 21 Conn., 627.
Kean v. Davis, 21 N. J. Law, 683.
Bernshouse v. Abbott, 45 N. J. Law, 531.
Lacy v. Dubuque Lumber Co., 43 Iowa. 510.
Sargent v. Morris, 3 Barn. & Ald., 277.
Pigott v. Thompson, 3 Bos. & P., 147.
Dawes v. Peck, 8 Durn. & E., 320.

Beckham v. Drake, 9 M. & W., 79.
Affirmed in Exch. Ch., 11 M. & W., 315.
Green & Kopke, 18 Com. Bench. 549.
S. C., 36 Eng. Law and Eq., 396.
Calder v. Dobell (L. R.), 6 C. P., 486.
Gadd v. Houghton (L. R.), 1 Ex. Div., 374.
Southwell v. Bowditch (L. R.), 1 C. P. Div., 357.
Hayn v. Culliford (L. R.), 3. C. P. Div., 410.
Irvine v Watson (L. R.), 5 Q. B. Div., 414.
Doris v. Donaldson (L. R.), 9 Q. B. Div., 623.
Ogden v Hall, 40 Law Times R., 751.

4. The conflict is more apparent than real in the cases, in reference to the rule. All of the authorities agree that it relates merely to contracts not under seal, but there is some diversity of opinion as to the *extent* of its application to negotiable paper, or to contracts within the statute of frauds. In many, if not most of the cases, where the rule was apparently ignored, the contracts were made and signed by the agent *without naming* the principal, and the effort was, not to show which was in fact the contracting party, but to *relieve* the real contractor from his obligation by evidence *aliunde* that he was acting as agent. In other cases the effort was to vary the *terms* of the agreement and not to ascertain the real *party*, whether the signature of the agent represented his principal or himself. And in other cases still, the agent was held personally liable because of *fraud* or of *lack of authority* to bind the principal or of want of capacity on the part of the principal to make the contract. But where it appears on the face of a contract, made by an agent, in which the principal is *named*, that he acts as agent and *intends* to bind the principal, the law will give *effect* to the intention in whatever form it may be expressed. Applying these principles to the case at bar, the *statement* in the body of each contract, that "I, Gustaf Lundberg, *agent for* N. M. Hoglund's Sons & Co. of Stockholm, agree to sell," etc. (fols. 26, 28), was a *disclosure* of his principals, and evidence of his *intention to act for and to bind them* in the transaction. Each *contract* as well as the *letter* containing the analyses which was incorporated with and became *part* of the contracts, and every subsequent *communication* from the plaintiff to the defendant, also contained the heading "Gustaf Lundberg, agent for N. M. Hoglund's Sons & Co., Stockholm." (Fols. 72, 153, 291, 293, 297, 298, 300, 303.) These facts were sufficient, although

the agent signed his individual name to the contracts, to make them *binding* on his principals, and to *exonerate* the agent.

N. E. M. Ins. Co. v. DeWolf, 8 Pick. 56.
Carpenter v. Farnsworth, 106 Mass., 561.
Lampson, etc., C. v. Russell, 112 Mass., 387.
Chipman v. Foster, 119 Mass., 189.
Goodenough v. Thayer, 132 Mass., 152.
Simpson v. Garland, 72 Me., 40.
Same Case, 76 Me., 203.
Bellinger v. Bentley, 1 Hun, 562.
Hood v. Hollenbeck, 7 Hun, 362.
Stearns v. Allen, 25 Hun, 558.
Fowle v. Kerchner, 87 N. C., 49.
Deering v. Thorn, 29 Minn., 120.
Green v. Kopke, 18 Com. Bench, 549.
Same Case, 36 Law & Eq., 396.
Gadd v. Houghton (L. R.), 1 Ex. Div., 357.
Southwell v. Bowditch (L. R.), 1 C. P. Div., 374.

And the doctrine of these cases has recently received the distinct approval of this court.

Metcalf v. Williams, 104 U. S., 93.
Hitchcock v. Buchanan, 105 U. S., 416.
Post v. Pearson, 108 U. S., 418.
Whitney v. Wyman, 101 U. S., 392.

II.

The Circuit Court also erred as alleged in the third, fourth, fifth and sixth assignments of error, in charging the jury "that it *cannot* be said that it was the *intention* of the parties that this warranty should be *literally and actually* carried out to a a *minute* degree;" "that if the variation was so minute, so infinitessimal that it did not affect the quality of the iron for the *purpose* for which it was to be *used*, then it *must* have been the *intention* of the parties that the warranty was *not to be literally, strictly and exactly carried out*," and that if "there was no difference between the analysis accompanying the contract and the iron delivered which in any way affected it, which in any way made it *worse or less salable or less merchantable*, then you have a right to say that there was a compliance with the analysis;" and further in *declining* to charge the jury that the defendant "was not bound to receive any of the iron under either

contract, unless it all *answered* in fact to the description or *quality* stated in the contract," or "that if the jury find that as much as *one cast* of iron in either of the brands in question contained more phosphorus than the limit stated in the contract, it was sufficient to justify the defendant in rejecting the same" — "or that if "*one cast* of the iron in either of the lots contained more phosphorous than the limit stated in the contract, that was sufficient to reject the *entire lot* under such contract." (Fols. 331, 333, 339, 340, 344.)

The substance of the evidence relating to the *quality* of the iron in controversy, and the *deleterious* nature and effect of *phosphorus* in the metal, is set forth in detail in the preliminary statement of facts. The effect of phosphorus in steel is to make it *brittle*, and to render it of comparatively little value (fol. 219, 242, 264); and the *strength* of steel for *tempering* depends on the *minimum* of phosphorus. (Fols. 246, 266.) "The actual value of iron and steel for use is largely dependent upon the amount of phosphorus contained in them. Swedish pig-iron, for instance, which is the lowest in phosphorus, was worth thirty-five dollars a ton in the market, when ordinary Bessemer pig could be bought for twenty-two dollars a ton." (Fol. 252, 305, 306.) The phosphorus in the pig *cannot be eliminated* in the process of manufacturing steel, but all the phosphorus is concentrated in the smaller bulk. (Fols. 247, 253, 254, 268.) The iron, however, containing *too much* phosphorus can be mixed with that containing a less quantity in the process of manufacturing steel so as to obtain the *minimum standard* for the particular purpose. (Fols. 219, 236, 239, 250, 266.) But if analyses of different pigs of the same lot or brand should disclose a *variation* in the amount of phosphorus contained in them, it would be necessary in using it to *assume* that it all contained the *highest* percentage thus ascertained in any of the pigs as otherwise the product of steel might be rendered unfit for the purposes designed. (Fol. 250.) Phosphorus, silicon, carbon and manganese, are all considered *hardening* elements in iron and steel, and, therefore, in determining in a given case whether a certain amount of phosphorus is harmless or detrimental, the amount of those elements must also be considered; and there may be a larger percentage of one when the percentages of the others are comparatively lower. (Fols. 240, 241, 245.) In making steel rails, boiler plates, springs and other lower grades of steel, in which as much as .1 (one-

tenth) of one per cent of phosphorus is allowable, the extreme limit of variation in excess is .01 (one-hundredth of one per cent.) (Fols. 254, 260.) And in the same ratio, where the contract calls for .03 (three hundredths of one per cent), the limit of variation would be .003 (three-thousandths of one per cent), so that the extreme limit of phosphorus for practical use under that contract would be .033 (thirty-three thousandths of one per cent), and under the other contract, which calls for .024, the extreme limit of phosphorus would be .027 (twenty-seven thousandths of one per cent).

In the manufacture of *tool* steel, however, which is a higher grade than rail or spring steel, the effort is to keep the amount of phosphorus *under* .02 (two-hundredths of one per cent); and if it exceed .03 (three-hundredths) it would be rejected and not used at all. Fols. 263, 264, 313.) The variation, for use, from the limit named in the contracts, if the use or purpose had been specified, should not exceed .003 or .004 (three or four thousandths of one per cent). (Fol. 320.) And the tendency of the trade as well as the main effort of the manufacturer is to *reduce* the phosphorus as much as possible. (Fols. 265, 273, 307.) "The defendant manufactured a very large variety both of iron and steel, the largest output being in the shape of steel rails, but about 20,000 tons of *merchant* and *special* steels a year; and for such special purposes the extreme limit of phosphorus is .04, and they try to keep it down to .03, but .034 is their *usual formula*." (Fols. 244.)

The principal question of fact litigated on the trial was whether the several brands of iron contained *more* phosphorus than the amounts stipulated in the contracts respectively. The plaintiff called five witnesses, having no extended experience in analyzing metals for phosphorus, which is a specialty, and requires practical as well as theoretical knowledge, and who had made analyses of specimens of each brand of the iron; and two of them, McIntosh and Elliot, testified they had obtained, one as much as .032 and the other .0307 of phosphorus from the brand N. B. G. P. H.; three of them, Sharples, Hills and McIntosh, testified they had obtained, one of them .041, another .033 and the third .032 of phosphorus from the brand S. B. V. E.; and two of them, Elliott and McIntosh, testified they had obtained, one of them .028 and the other .025 of phosphorus from the brand N. B. B. B. K. The defendant on the other hand called eight witnesses, who were

not merely theoretical chemists, but persons whose special employment had been for years to make daily and weekly analyses of these metals for this element of phosphorus, in the great iron and steel manufactories of the country, and the lowest result obtained by any of them was .0419 and the highest .0558 of phosphorus from the brand N. B. G. P. H.; the lowest was .0334 and the highest .044 of phosphorus from the brand S. B. V. E.; the lowest was .040 and the highest .0503 of phosphorus from the brand N. B. B. B. K. (These results are contained in the table at page seventy eight of the record book.)

It will thus be observed that the merits of the controversy related merely to infinitesimal differences and results, as they would appear to the average lay mind; but these minute differences involved the most important practical consequences to the parties. The decision of the principal issues of fact depended upon the results of scientific processes of investigation conducted by professional experts, and, therefore, necessarily involved "technical rules of science," as well as the "general principles of commerce, of law, and of common sense." We protest against the implication, in the charge, that there is any conflict between the rules of law and the rules of science. The law itself is a science, and is gradually unfolding itself with the progress of civilization, in harmony with the principles of science. If, therefore, it was proven by "the technical rules of chemical science," that the amount of phosphorus in the iron exceeded the contract limit, the law will accept the scientific demonstration, and enforce the rights of the parties accordingly under the contract.

Indeed, there was no other satisfactory method of determining their contract rights than by the scientific standards embodied in the contracts. The parties had mutually adopted the chemical analyses as the authorized means of ascertaining and measuring their duties and obligations. And the effect of such a stipulation in the contracts was "to entitle the purchaser to a commodity corresponding, *chemically*, in all respects with the standard"; or, in the language of the court, "the *precise* right of the purchaser was to receive an article containing the *chemical properties* enumerated in the guaranty, and these in the *proportions* and *up* to the degree of strength held out as a standard."

Allen v. Young, 62 Ga., 617, 619.

"The quality of the ore cannot be up to the sample unless it be *equal* to it." "Nothing less fills the measure of the agreement." "A contract to deliver goods of a *defined* quality is as capable of enforcement as any other contract"

Mining Co. v. Jones. 108 Penn., 65, 66.

"The defendant was not engaged in buying iron to sell it without changing its form. The name of the brand, to it and its customers, was nothing; the *quality* of the iron everything. No case has been cited, nor have we found one, opposed to the view that here was a warranty, *only to be satified by iron equal in quality with that which the defendant had purchased.*"

Dayton v. Hooglund, 39 Ohio St., 671, 681.

And it has been held that even where the goods tendered were *equal in quality*, but did *not* answer the *description* of the warranty as to brand or manufacture, there was *no performance* of the contract; as where the bill of sale called for "foreign refined rape oil" "warranted equal to sample," and "the oil tendered *corresponded* with the *samples* given, which however consisted of rape oil adulterated with hemp oil," and "was known in the market as rape oil."

Nichol v. Godts, 10 Hurls. and Gor., 191.

So where a contract stipulated for the sale of 300 tons "of Madras rice to be *shipped* at Madras *during the months of March and April*, 1874" and the shipment *commenced* on the twenty-third of *February* and closed on the third of March, it was held, although the rice was of the kind and quality described, that it was *not* a compliance with the contract, and the purchaser could *refuse* to receive it. *Per* Lord Chancellor CAIRNS: "It is a mercantile contract, and merchants are not in the habit of placing upon their contracts stipulations to which they do not attach some value and importance." "It is no answer to the literal meaning to say that it puts an additional burden on the seller, without a corresponding benefit to the purchaser; that is a matter of which the seller and the purchaser are the best judges. Nor is it any reason for saying that would be a means by which purchasers without any real cause would frequently obtain an excuse for rejecting contracts when prices had dropped. The nonfulfilment of any term in any contract is a means by which a purchaser is able to get rid of the contract when prices have dropped; but that is *no*

reason why a *term* which is *found* in a contract should *not be fulfilled*." "If the construction be that which I have supposed, the plaintiff, who sues upon the contract, has not *launched* his case until he has shown that he has *tendered that thing* which has been contracted for, and if he is *unable* to show that, he *cannot* claim any damages for the nonfulfilment of the contract." And per Lord BLACKBURN: "If the description of the article tendered, is different in *any* respect, it is not the article bargained for, and the other party is *not* bound to take it; I think in this case what the parties bargained for was rice, shipped at Madras. Equally good rice might have been shipped a little to the north or a little to the south of Madras. And probably equally good rice might have been shipped in February as was shipped in March, and I dare say equally good rice might have been put on board another ship as that which was put on board the Rajah of Cochin. But the parties have chosen, for reasons best known to themselves, to say: We bargain to take rice, shipped in this particular region, at that particular time, on board that particular ship, and *before* the defendants can be compelled to take *anything* in fulfilment of that contract, it must be shown not merely that it is *equally good*, but that it is the *same article* as they have bargained for, otherwise they are *not* bound to take it."

Bowes v. Shand, L. R., 2 Ap. Cas., 455, 463, 465–6, 468, 480–1.

The rule is well settled, in accordance with the charge of the circuit judge, that the analyses referred to and thus made part of the contracts constituted an explicit and express *warranty* on the part of the plaintiff that the iron should be of the *quality* therein described.

Norrington v. Wright, 115 U. S., 188.
Filley v. Pope, 115 U. S., 213.
Pope v. Allis, 115 U. S., 363.
Davison v. Von Lungen, 113 U. S., 40.
Dayton v. Hoogland, 39 Ohio St., 671.
Osgood v. Lewis, 2 Har. & Gill, 495.
Lowber v. Bangs, 2 Wall, 728.
Bach v. Levy, 101 N. Y., 511, 514.
Hill v. Blake, 97 N. Y., 216.
Hawkins v. Pemberton, 51 N. Y., 198.
Bagley v. Cleveland & Co., 21 Fed. Rep. 159.
Bowes v. Shand, L. R. 2 Ap. Cases, 455.
Simond v. Braddon, 2 Com. Bench N. S. 324.
Josling v. Kingsford, 13 Com. Bench N. S., 447.

1. In any event it was error to instruct the jury that if "there was no difference between the analyses accompanying the contract and the iron delivered which in any way made it worse or *less salable or less merchantable*, then the jury have a *right* to say that there was a *compliance* with the analysis" or contract; and again, "that if the *variation* was so minute, so infinitesimal that it did not affect the quality of the iron *for the purpose for which it was to be used*, then it *must* have been the *intention* of the parties * * that the warranty was *not* to be *literally*, *strictly* and *exactly carried out*." This was equivalent to telling the jury that if the iron was *fit* for the *purpose* for which it was *intended* by the *purchaser* it was *sufficient*, although it did *not* comply with the *terms* of the warranty. The court had *excluded* evidence offered by the defendant to show the *particular purpose* for which the iron was purchased (fol. 252), and had previously charged the jury, in speaking of the duty of the plaintiff, that he was "*not* required by this contract to furnish iron *suitable for any particular purpose*, but only to furnish iron in accordance with the agreement." (Fol. 330.) Evidence had been given, however, of the general course of business and of the articles manufactured by the defendant (fol. 244, 245), and it had been proven that iron containing an *excess* of phosphorus could be *mixed* with iron containing a less quantity in the process of manufacturing steel, and thus obtain the requisite standard of steel for a given purpose (fols. 219, 236, 239, 250, 266), and with this evidence before them the jury were told in effect that even if there was an *excess* of phosphorus above the contract limit, yet, if the *variation* was not sufficient to *affect* the iron for the purpose for which it was to be *used*, or if it was still *merchantable*, they might find a verdict in favor of the plaintiff. But an article may be fit for some purposes, or for ordinary purposes, and be merchantable or salable and not be the first quality or up to the standard fixed by the terms of a contract.

Swett v. Shumway, 102 Mass., 365, 369.
Jones v. Just, L. R. 3 Q. B., 197, 203.

2. It was, however, an error even on the infinitesimal theory to *refuse* to charge that if as much as *one cast* in either of the lots or brands of iron contained more phosphorus than the contract limit, that was sufficient to entitle the defendant to reject the entire lot.

(Fol. 340.) It had been proved that one cast of iron contained from ten to fifty tons, according to the size of the furnace (fol. 248), and if there were no more than ten tons, with an excess of phosphorus interspersed through either lot, the defendant would have been compelled to assume in using it that *there was the same excess* running through the entire lot, as otherwise the product might be rendered unfit for the purpose designed. (Fols. 250.) Supposing there were ten tons of iron containing from .04 to .05 of phosphorus scattered through the entire lot of 300 or 500 tons, thus requiring the defendant to use the entire brand on the assumption that it all contained the same high percentages of phosphorus—is it a debatable proposition that there was a breach of the warranty? And yet this is the substance and effect of the instruction to the jury, upon which they are presumed to have rendered their verdict.

III.

The Circuit Court also erred, as alleged in the twelfth and thirteenth assignments of error, in receiving the testimony of the witness Wuth to show that the quality of the iron was not injuriously affected by the percentage of silicon found therein, although in excess of the contract limit (fols. 307, 308); and in refusing to rule and decide as requested that the plaintiff could not recover on the contract of February 11, 1880, as it appeared affirmatively from all the analyses given in evidence that one, if not both, brands of iron, S. B. V. E. and N. B. B. B. K., contained more silicon than was stipulated for in the contract. (Fols. 216, 217.) The contract analysis called for .75 (seventy-five) hundredths of one per cent of silicon in these brands, aggregating 300 tons of iron (fol. 154). The plaintiff introduced in evidence only three analyses of the S. B. V. E. brand for silicon, made by Sharples, Hills and Elliot, showing the following results: Sharples 1.05, Hills .90, and Elliot 1.113, of that substance. All the analyses read in evidence by the defendant also show an excess of silicon above the contract limit. (They will all be found in the sixth column of the table at page seventy-eight of the error book).

These exceptions raise the distinct legal proposition upon undisputed evidence, whether the vendee may insist upon *strict performance* of a condition precedent or warranty in the contract

of sale, or whether the vendor may escape under cover of the infinitesimal doctrine of variation. The legal aspects of the proposition have been considered and the cases cited under point II. The parties themselves fixed the *limit* of silicon and made it a *material* matter by the *terms* of the contract, and the simple question is whether the court may *overrule* the parties in determining the *materiality* of the substance and *extend* the limit one jot or little beyond the letter of the contract.

IV.

The Circuit Court erred, as alleged in the seventh, eighth, ninth, tenth and eleventh assignments of error, in making the several rulings in reference to the *delay* of the plaintiff in serving notice of the contemplated *resales* of the property, and also relating to the subsequent *delay* and *manner of making* such resales in receiving the evidence, declining to direct a verdict for the defendant, submitting evidence to the jury, and refusing requests to charge the jury, as hereinafter specified. (Fols. 155–161, 167–170, 173, 176, 324, 325, 327–329, 341–343. The *facts* in detail, bearing on these exceptions, are set forth in the preliminary *statement*, containing the substance of the evidence. It thus appears that the iron was received in New York, June 9, 1880 (fol. 176), and was transported to Troy and the analyses made by defendant and reported to the plaintiff, at Boston, as early as June 25, 1880. (Fols. 177, 281, 282.) These analyses show that the brand N. B. G. P. H. contained of *phosphorus* .047 (forty-seven thousandths of one per centum) instead of .03 (three-hundredths of one per centum); and the brands S. B. V. E. .042 (forty-two thousandths of one per centum), and N. B. B. B. K. .049 (forty-nine thousandths of one per centum) instead of .024 (twenty four thousandths of one per centum), as stated in the contracts. And the plaintiff was *then*, June twenty-fifth, *informed* that the iron was *not* up to the *standard* of the purchase or of the *purpose* for which it was designed. (Fols. 281, 282.) June twenty-ninth plaintiff was *again* informed in writing that defendant "*could not consent* to take the iron upon the purchase." (Fol. 283.) July twentieth defendant explained more at large in writing why it *could not accept* the iron. (Fols. 284–6.) August twentieth defendant again *stated* to the plaintiff by letter that

"the *iron was subject to his order* and to such charges as it had been subjected to." (Fols. 286, 287.) A few days afterward plaintiff went to the city of Troy (fols. 177, 178), and was there *notified* in a personal interview, as he himself testified, that defendant "*refused to receive* the iron on account of its containing *more phosphorus* than the contracts stipulated." (Fols. 166, 176.) Plaintiff in the meantime *demanded* from time to time of defendant *payment of the purchase-price*, which was refused. (Fols. 291, 293, 294.) His last demand of payment was made by letter November thirteenth, to which defendant replied two days later, November fifteenth, "reiterating what it had previously stated that it could not receive the iron upon the contracts." (Fol. 162.) Nearly three weeks later, December fourth, and more than *five months* after receiving the *first notice* from defendant that it refused to accept the iron, plaintiff *notified* defendant that "he should *sell* the iron and hold it responsible for the difference." (Fol. 72.) But even then he did not proceed to sell the iron at *public* sale, nor at private sale *within a reasonable period*, but retained it as stock in store to await, not the demand of the trade or of the public, but the urgency or the convenience of his private business, doling it out at retail from time to time to his *private customers* as a dealer in the article. (Fols. 158, 161, 168.) The *first* sale was made March 21, 1881, over *three and a half* months after the *notice* in December, and *nine* months after the *refusal* of defendant to receive the iron; the second sale, five days later; the third sale, May sixteenth; the fourth sale, July twenty-fifth; the fifth sale, August fourth; the sixth sale, August sixth; the seventh sale, August twenty-fourth; and the last sale, October 3, 1881, *ten months* after the *notice* of resale, and over *fifteen months* after the first *refusal* to accept the iron. (Fol. 159.) During all this period the market had been *declining*—it had fallen four dollars per ton, while the resales were taking place from March to October, 1881, as appears from the statement of sales. (Fol. 160.) The market had declined five or six dollars per ton from November 16, 1880, to the following spring (fol. 169), or, as plaintiff afterward modified his testimony in answer to the promptings of his counsel, "*between the summer and fall, from the arrival of the iron*" in June, 1880. (Fol. 170.) In either view there was a *decline* of at least nine or ten dollars per ton from the time of

the *refusal* to receive the iron to the time when the great bulk of it (782 tons) was *resold* in August and October, 1881; and the *actual decline* was probably five or six dollars per ton in addition, from November, 1880, to March, 1881, as plaintiff first testified and then retracted, stating that he could not give the price in November, 1880, from recollection, but *had* the data to show it which he *would* produce, but never did. (Fols. 170, 171.) There was no other evidence of the market value of the iron in November or December, 1880.

Upon this evidence the court *declined* to direct a verdict for the defendant (fol. 324), and *refused* to hold as matter of law that there was an *unreasonable delay* either in giving the *notice* of resales or afterward in *making* the resales (fols. 324, 341, 342), but submitted it to the jury to say "whether or not the plaintiff did use due diligence in disposing of it." (Fol. 337.) To all these rulings the defendant severally excepted. (Fols. 324, 325, 342.) These rulings, in their various aspects, present the legal proposition whether plaintiff was not guilty of *unreasonable delay*: (1.) In giving *notice* of his intention to *sell* the iron on account of the defendant. (2.) In subsequently *making* and completing the sales. (3.) Whether he was justified in his *method* of making the sales, limiting them to his *regular customers* in the line of his *private business*, which necessitated the long delay. And (4.) whether there was any legal proof of damages to submit to the jury.

The general rule doubtless is, when the vendee refuses to accept and pay for goods sold under the contract, that the vendor may proceed within a *reasonable time* and resell the goods, and charge the purchaser with the difference between the amount thus realized and the contract price.

Pickering v. Bordwell, 21 Wis., 569,
Tilt v. Le Salle Silk Co., 5 Daly 20, 26.
Smith v. Pettee, 7 Hun, 334.
Haines v. Tucker, 50 N. H., 307.
Brownlee v. Bolton, 44 Mich., 218.
Camp v. Hamlin, 55 Ga., 259.
Hughes v. U. S., 4 Court of Clms R, 65.
Pott v. Flather, 16 Law J. N. S. Q. B., 366.

But what is a reasonable time? "May the vendor wait any length of time, speculating on the chances of the market, and when the price very greatly *declines*, as in this case, sell, and call

upon the vendee to make good the *difference*? It seems to us not." "Now the plaintiff kept the wheat in this case some fifteen months *after the default* of the defendant. * * Perhaps he might have waited a *short time* after the expiration of the fifteen days, to see whether the defendant would receive the wheat as he said he would. But certainly he could *not* wait fifteen months, until the condition of the market was entirely changed. He was *bound* to sell within a *reasonable* time in order to *entitle* himself to the *right to call* upon the defendant *to make up the loss*."

Pickering v. Bordwell, 21 Wis., 572, 573.

"This is undoubtedly the rule where the vendee absolutely *refuses* to receive the goods. The vendor *cannot* in such a case *retain* them upon a *falling market*, and when sold, hold the *vendee* answerable for their subsequent *diminuition* in value. He must either sell them *at once* or accept as the measure of his damages the difference between the contract price and their *market value* at the *time* when the vendee *refused* to receive them."

Tilt v. Le Salle Silk Co., 5 Daly, 26.

"The jury were charged that the measure of damages would be the difference between the *contract price and the price obtained on the resale*. The substantial effect of this instruction was to require the jury, in case of their being satisfied that plaintiffs ought to recover, to accept the plaintiff's *account* and regard the *price* so stated as having been *obtained* at the *sale* made from *two to three years* after the transaction, as *conclusive* of the depreciation of the posts in value from the contract price. The *instruction* was not authorized by the evidence. At the outset it was *material* to inquire whether the expedient of a *resale*, in view of the circumstances, was within a *reasonable time*. But, apart from this, the case was barren of facts to afford any ground for argument that the real condition and the steps taken were such that, in justice, the price could be held binding on the purchasers. The *state of facts* in the record did *not* permit the application of the doctrine of *resale*, and there is no occasion for a particular examination of it. It is now sufficient to say generally that the vendor's right of resale must be exercised in good faith, and in such *time and manner*, and under such circumstances, and by such methods as will be *best calculated* to produce the *fair value* of the

property, and that in case he seeks to avail himself of it before a jury, it is *incumbent on him* to adduce the necessary facts *to show* that in exercising the right this manner was observed."

Brownlee v. Bolton, 44 Mich., 220, 221.

The purchasers of 5,000 bushels of malt, to be delivered at the rate of 1,000 bushels per month, on the 25th of February, 1869, *refused to receive* any more of the article under a contract made November 18, 1868. The vendors, after the expiration of the contract, used a portion of the malt, and offered to prove that they *sold* the balance in October, November and December, 1869, at the then market rates. "Upon the refusal of defendants to accept, the plaintiffs might at their option, *within a reasonable time*, have given notice to defendants and sold the property, either at auction, or in such way as to be *able to show* that it sold for a fair price; and the price *thus* obtained, deducted from the contract price, would furnish the usual measure of damages. *This was not done.* It will therefore be necessary to ascertain the *market value;* and then, we think, the proper measure of damages will be the difference between the contract price and such market value. It appears that the market price of malt was falling from December, 1868, until the sales in Boston were made by plaintiffs in the fall of 1869. It becomes necessary, therefore, to consider *at what time* the difference between the contract and market prices shall be taken in fixing the damages." "We think the plaintiffs are entitled to recover the difference between the contract price and the market value of the malt, that is, what it *could have been sold for* AT THE TIME the defendants were bound by the contract to *receive* it. This would be at the rate of 1,000 bushels each month after the refusal, until the balance of the 5,000 bushels is covered by the estimate. That would be 1,000 bushels, March eighteenth; 1,000 bushels, April eighteenth; 1,000 bushels, May eighteenth; 1,000 bushels, June eighteenth."

Haines v. Tucker, 50 N. H., 313, 314.

"The plaintiffs had the right to retain it until it could be sold, after the defendants refused to receive the iron; and after making sale of it could recover the difference between its net proceeds and the price they were to receive for it, by the terms of the agreement from the defendants. But to conclude the purchasers by the

result of such a sale it should take place *as soon* after the *refusal* to accept the property, as that could practically be made. That was *not done* in this case, but the iron was retained in store by the plaintiffs for a period of *very near four months*, and during this time the market price of that description of iron was continually depreciating. They could not keep it in store for months as they did and then charge the loss caused by that delay upon the purchasers, for to *that extent* it was *not* the consequence of the defendant's *fault*, but of the plaintiffs *injudicious delay* in the sale of the property."

Smith v. Pettee, 7 Hun, 335.

The last case cited was reversed on appeal on a question of practice, that did not affect the rule above stated. "The referee *finds* that this sale was made *within a reasonable time* after the breach, and for the market price at the time of sale. There is nothing in the facts *found* showing any *error* in this conclusion, nor *affording any material* for deciding, as a question of law, whether the *time* was or was *not reasonable*. The *length* of time, the *circumstances* attending the sale, and the *state* of the market, are *not found*. The *only* point, therefore, which the defendants can make in *this* court, in respect to this finding, is that there was *no evidence whatever* to support it." "There was *some* proof in the case as to the *efforts* made by them to *sell* the iron, and whatever our opinion might be as to the weight of evidence, were that question before us, we cannot say that the conclusion reached by the referee was so wholly unsupported by evidence as to justify us in holding that it was an error of law, for which the judgment should have been reversed."

Smith v. Pettee, 70 N. Y., 13, 17, 18.

"Fruit trees were sold by written contract, at a stipulated price, to be delivered at a certain place, on a certain day, the price to be paid on delivery. They were tendered to the purchaser at the time and place, and he declined to receive them. Thereupon, the seller lingered *forty days*, and during that period sold them at auction. The testimony shows that they were worth at the time of tender, the price fixed by the contract, but the proceeds at auction amounted to only about *one-third* of that price. The mere fact is stated, in the evidence, that they were *sold* at auction and *brought* so much. The plaintiff should enter into a more *full an*

minute accounting as to the auction, in order to *use* it as a *final test of value.* He ought to show when and where the auction took place, what notice of it was given, how the sale was conducted, who were the purchasers of the various lots, and at what prices. In respect to the conduct and proceeds of the auction, he is in the position of a party *accounting*, and ought to account fully and with reasonable particularity, by the production of satisfactory evidence on the trial."

Camp v. Hamlin, 55 Ga., 259–262.

The vendors in December, 1861, contracted to sell to the United States government a quantity of corn to be delivered within forty-five days or by the first of February following. They were ready to deliver, but only a part of it was accepted. "At this time corn had fallen, so that if the claimants had sold this unaccepted quantity the difference between the market and contract price would have been about ten cents per bushel." Two or three months afterward the corn was shipped to other markets for sale, but in consequence of heating and decline in price brought only a nominal sum. "The claimants elected to hold the corn for their own security and as the trustees of the defendant. In so acting, as trustees, they were bound to proceed in the manner prescribed by the well-settled rules of law. They had no right to ship the corn to an unusual and dangerous market, nor to *hold* what, under the circumstances, was a perishable article for the *chance* of realizing a *better price.* We think that however well intended the claimants' conduct was, it was nevertheless of that improvident and *speculative* character for which the law holds vendors responsible. It follows that the claimants should only recover the *fair profit* they would have made. This we have found ten cents per bushel."

Hughes v. U. S., 4 Ct. of Claims R., 71–74.

"Plaintiffs on the 20th of October, 1845, sold the defendant twenty railway shares at twenty-five shillings premium, no day being mentioned for delivery of the scrip. On the twenty-first of October the shares had fallen to fourteen shillings premium, and on that day defendant gave notice that he should not take the shares. On the twenty-second the shares were at eight shillings premium, and the price continued to fall till the sixth of December, when the plaintiffs *sold* the shares at seventeen shillings, discount.

An action being brought for breach of defendant's contract: *Held*, that the proper measure of damages was the difference in price between the twentieth and twenty-second of October.

PATTERSON, J., to counsel: "You can hardly contend that you might *wait* for any period in order to *sell*. If the shares had risen in value, and there had eventually been a profit on them, your argument would go to show that the defendant could have sued the plaintiffs for the difference. If the plaintiffs could *wait* for any time in order to see how the *market would turn*, the reciprocity would be all on one side."

Pott v. Flather, 16 Law Jour. (N. S. Q. B.), 368.

While the courts in this country generally recognize the right of the vendor to resell the property within a reasonable time after the default of the vendee, and to charge him with the difference between the proceeds of the sale and the contract price, there is a great diversity in the decisions of different States as to the extent and the manner of enforcing the right. In some States a particular notice of the time and place of the resale is indispensable, while in other States only a general notice of an intention to resell on account of the vendee is required; and in one or two instances it has been held that no notice whatever is necessary. In some States it has also been held that the resale must be made in the *same market* where the delivery was to take place under the contract, but the general current of authority is that it may be made elsewhere in the best market for the article at the time. But it is by no means the settled doctrine in England that a resale may be made at all on account of the purchaser. Such a proceeding by the vendor is held to be a rescission of the contract.

Benjamin on Sales, 2d American ed., §§ 787, 794 and cases cited.

If, however, the general rule prevailing in this country is to be recognized and enforced by this court, it is important that the right of resale should be properly *restricted*, so as not to bring it in *conflict* with other established rules of law. If the vendor may follow his own inclination and convenience in disposing of the property, he is vested with the power to *change the rule of damages* in this class of cases in his own discretion. He may take the risk of a rising valuation, or hold the vendee to the hazard of a continuous decline in the market. And if the rulings of the

Circuit Court be affirmed, the measure of damages in this case is the difference between the contract price and the market value in August and October, 1881 (when the great bulk of the iron was sold). But if any principle can be regarded as settled by the concurrent voices of the judicial tribunals, it may be assumed that the vendor's right of recovery, when the vendee refuses to receive and pay for property, is limited to the difference between the contract price and the market value at the *time* of the *default*, which was in June, or at furthest in November, 1880.

Gordon v. Norris, 49 N. H., 376.
Dana v. Fiedler, 12 N. Y., 40, 48.
Cohen v. Platt, 69 N. Y., 348.
Williams v. Jones, 1 Bush., Ky., 631.
Girard v. Taggart. 5 Ser. & Rawle, 19.
Andrews v. Hoover, 8 Watts, 239.
Ganson v. Madigan, 13 Wis., 67, 72.
Allen v. Jarvis, 20 Conn., 39.
Valpy v. Oakely, 16 Ad. & El., 941.
Boorman v. Nash, 9 Barn. & Cr., 145.
Shaw v. Holland, 15 Mees & W. 136.

A brief reference to the cases which have recognized the right of resale will show that the courts have endeavored, with varying success, to enforce the limitation for which we contend

In Stewart v. Coutz (8 Mees. & Welsb., 160), *eight days* was held a reasonable time to resell stock after the purchaser had refused to receive it.

In Crooks vs. Moore (1 Sandf., Superior C. R., 297–299, 303), there were two contracts, the time of delivery in one being February twentieth, and in the other March 1, 1847. The purchaser himself *asked* for delay, *promising* to accept and pay from day to day for six days after maturity of the latest sale. The vendor then gave *notice* of resale and sold the iron on the eighteenth and nineteenth of March, "ten or twelve days subsequent to the notice." In that case the iron was turned over to a regular broker in the trade and disposed of in the usual manner, being offered "to all the other dealers, and every effort made to get the best price." (See statement of testimony, page 293.)

In Sands v. Taylor (5 Johns, 395), a cargo of wheat was sold by the master to the defendant, at the port of New York, on the 20th of December, 1807. After a part had been delivered the

rest was rejected. As soon as the vendor in Virginia was informed and could reasonably act, on the second of February following, he gave notice of resale for the eleventh of February, when the sale took place at auction, after being publicly advertised.

In Girard v. Taggart (5 Ser. & Rawle, 19, 20), as appears from the preliminary statement of facts, the original sale of teas was made December 23, 1813, and the delivery tendered and refused the following Wednesday. Notice was then given of the resale which took place at auction on the tenth day of January following. This was about twelve days after the refusal.

In Andrews v. Horner (8 Watts, 239), the resale of the lumber was immediately after the refusal of the purchaser to receive it. And in that case the resale was not regarded by the trial court nor accepted by the jury as conclusive. "Though a resale is a convenient, and often a satisfactory means, it does not follow that it is the only one. Whatever be the fairness of a *public* sale as a test of value, it is obvious that a private one for account of a prior vendee is less so, inasmuch as the vendor has *no motive* to press for the *highest* price." (Page 240.)

In McCombs v. McKenna (2 Watts & Serg., 216), the time of delivery and refusal to pay for clover seed was the 1st of February, 1829, and the resale took place on the fourteenth of the same month. But the resale was not received as conclusive evidence. "A resale is a usual mode to ascertain the difference between the contract-price and the value of the article when the vendee refuses to accept it. But it is not the only mode, nor, even when it takes place, is it decisive. The jury may, as was the case here, have evidence of other kinds to show the value, and are to judge in the best manner they can from the whole case." (Page 219.)

In Tilt v. Le Salle Silk Co. (5 Daly, 20–22), the delivery of the silk was tendered and refused on the 17th of December, 1870. But the refusal was reconsidered by the purchaser, who, in February following, "thought he would take it in a few days;" and "it was kept from February to May with the *understanding* that the purchaser was to send for it," when notice was served that it would be sold at public auction on the tenth of May. It was sold accordingly and bid in for the original purchaser. (Pages 25, 26.) *Per* DALY, *Ch. J.*: "We cannot say, as a matter of law, that the plaintiffs were not justified in holding it for two months, or, to express it

differently, that there was, under the circumstances, unreasonable delay on their part in not selling it before the expiration of that period. If Simpson, after this conversation in February, had *informed* them of a *final conclusion* on his part *not to take it*, then it would have been *otherwise*, and it would have been *incumbent* upon them to *sell* it for the *best* price they could obtain at the *earliest* practicable period thereafter." (Page 27.)

In Lewis v. Greider (49 Barb., 607, 610, 638), the purchaser refused to fulfill his contract on the 15th of March, 1865, and notice of resale of the barley was given the same day. Being unable to sell it at the place of delivery, it was shipped to the city of New York *as soon as navigation opened* in the spring and sold there, so that the avails were received on the twenty-seventh of May.

In Pollen v. Le Roy (30 N. Y., 549, 554, 555), the purchaser refused to receive the lead on the 6th of July, 1853, notice of resale was given on the next day, and the sale was made on the thirteenth of July — all within a week.

In Duston v. McAndrew (44 N. Y., 72), the resale was made "in less than one month from the time the defendant refused to take the hops." (Page 79.)

In Lindon v. Eldred (49 Wis., 305), the default of the purchaser occurred on the 29th of December, 1876, notice of public sale was published on the fifteenth of the following January, and the resale took place pursuant to the notice on the twentieth of the same month. (Page 314.)

In Applegate v. Hogan, (9 B. Monroe [Ky.], 69), the resale of the "corn was a few days" after the tender of delivery and refusal by the purchaser.

In Bartley v. New Orleans (30 La. An., 264), the tender of delivery, refusal to accept the timber, and notice of resale were made on the 17th of June, 1875, and the resale took place on the following second of August.

In all of the Massachusetts cases the resales were promptly made after the defaults occurred, so that no question has ever arisen there as to what is a reasonable time.

If this be sound doctrine, the court below erred on the trial in the following rulings:

1. In receiving in evidence the *amounts* obtained from the *resales* and the market rates at the dates of the resales, as legal evidence of damages.

2. In *refusing* the request to charge the jury that the *long delay* in making the resales after the *notice* was given and the sales were commenced, was an *unreasonable* delay.

3. In ruling that the evidence of the proceeds of resales, and the facts that such proceeds were the market rates at the dates of such resales, were *legal and sufficient proof* of damages to warrant the jury in finding a verdict for the plaintiff.

4. In *submitting to the jury* upon this evidence, whether the *notice* of intention to resell the property on account of the defendant was given in a *reasonable* time after the refusal of the defendant to receive the iron, and whether the *resales* were made in a reasonable time after such refusal and notice.

5. In charging the jury, as matter of law, that if the final refusal of the defendant was given on the fifteenth of November then the *notice* of intention to re-sell the property on the fourth of December *was given within a reasonable time.*

6. In any event it was error for the court to charge the jury that in deciding the question of *reasonable time* they might consider "whether there was a *determination* on the part of the plaintiff to *abandon* all claim against the defendant *during that time*;" "or during the interval that elapsed there was an *effort* on his part to *induce* the defendant to *receive* the iron."

This was equivalent to telling the jury, as matter of law, that it *was a reasonable time*, because the plaintiff *had urged* the defendant from time to time to accept the iron and demanded payment notwithstanding its refusals. It was in fact permitting the plaintiff to determine the question of reasonable time for himself, and putting the defendant at his mercy.

V.

The Circuit Court also erred, as alleged in the fourteenth, fifteenth and sixteenth assignments of error, in receiving, under objection, the testimony of the witnesses Fernquist, Dillner and Cassel relating to the quality of *other* iron marked G. P. H. and manufactured in 1878, two years prior to the iron in question; and especially in receiving mere hearsay upon that subject. (Fols. 94-97, 104-109, 121, 122, 125-127.)

1. The plaintiff was thus permitted to read in evidence (on the assumption that all of the iron made in the same furnace from the same ore for years before the iron in question was manufactured, was of the same quality), a chemical *analysis* of G. P. H. iron made *two years* prior to the contracts of sale to the defendant, as proof of the *quality* of the iron in controversy. And that analysis of 1878, showing .90 of silicon, .028 of phosphorus and a trace of sulphur, was admitted to prove that the iron in question, made two years later, was *in accordance with the contract analysis*. The objection was distinctly raised "that it did not appear that the iron thus analyzed was a part of the iron in question, or was iron from the same furnace during the same year; and that it was immaterial and incompetent evidence to prove the quality of the iron sold to the defendant." (Fols. 77, 93-96.)

The two leading experts, sworn as witnesses for the plaintiff, Sharples and Chandler, plainly contradicted the assumption upon which the evidence was received. Their testimony was in accordance with the plaintiff's theory of the case that there were *variations* enough, even in successive *casts* of iron from the *same* ore on the same *day*, to account for all of the differences in the several analyses read in evidence. (Fols. 182, 183, 211, 212.) And yet the jury were permitted to consider an analysis of iron made from ore taken from the mines *two years* before, as competent and satisfactory proof that the 500 tons of iron of 1880 contained *less phosphorus* than the limitation fixed upon by the parties in the contract!

2. But if the analysis was competent it was certainly improper to receive the testimony of Dillner and Cassel to corroborate the chemist and the results of his analysis. Neither of them were chemists, and neither had ever analyzed this or any other iron; and neither of them had any personal knowledge of the correctness of the analysis or of the real proportions of phosphorus, silicon and sulphur contained in the iron. Their testimony, in this respect, was *hearsay*, as admitted in their depositions. (Fols. 104–109, 113, 118–122, 125, 127.) In answer to the question *as to his means of knowledge* of the percentages of phosphorus, silicon and sulphur in the iron in question, Dillner deposed that they had "trustworthy analyses" of the ores and iron manufactured from it, and although they had no analyses of the iron in question such

"trustworthy analyses bore witness to the pure and excellent quality of both the ore and the iron." (Fols. 104–106.) He further deposed that he was not a professional chemist (fol. 121), had never made an analysis (fol. 119) and never made any special or practical tests of the iron (fols. 108, 120), and yet he was allowed to testify that Fernquist's analyses were "trustworthy" and were "made conscientiously, exactly and in full harmony with the progress of science." (Fols. 104–106, 109.) Cassel also deposed that his *means* of knowledge of the percentages of phosphorus and other elements were "*previous analyses* of the iron they manufactured." (Fol. 125.) He was not a chemist, had made no tests (fol. 131), and had no recollection of the quality of the iron in question (fol. 130), or that the ore from which it was made had been analyzed. (Fol. 129.) But he was permitted to testify that "in the pig iron we made the percentage of phosphorus is about .02, of sulphur .02, and silicon more varying, but it used to be about one per cent; and I think that the *pig iron in question contained about these quantities.*" (Fol. 125.)

VI.

The Circuit Court also erred, as alleged in the seventeenth and eighteenth assignments of error, in receiving, under objection, the testimony of the witnesses Sharples and Chandler, as professional experts, to prove that there was *no variation*, or no *material* variation, as indicated by the *results* of certain analyses read to them of samples from the iron in question, in the *quality* of the *bulk* of the iron under each contract from the quality *stipulated* for in the contract. (Fols. 181–189, 204, 210.)

The results of eight analyses made by different chemists from different samples of the iron were read over to the witness Sharples, varying from a faint trace (not capable of weight) to .052 of phosphorus (fol. 181), and he was asked "to what extent in his judgment the *results* of those analyses indicated a *material variance* as to the quality and constituent parts of the *bulk* of the iron from which the samples were taken from the percentages" stipulated in the contract for 500 tons (fol. 181); which he answered, after much travail, that he "should not say there was *any variation.*" (Fol. 184.) The same opinion evidence was received in reference

to each of the other brands of iron contained in the other contract. (Fols. 185–189.)

The table of analyses (page 78 of error book), down to and including that of Eaton, above the triple lines (those below the triple lines having been proved afterward), was shown to the witness Chandler, and he was asked "to what *extent*, in his judgment (he having made *none* of the analyses himself, nor any *other* analysis of the *iron in question*), those *results* indicated a *variation* in the *quality* of the *bulk* of 500 tons, and of 300 tons, from the *guaranteed analyses*;" to which he answered, "not to *any* extent." (Fols. 204, 210.)

1. Assuming that the witnesses were competent, and all of the analyses properly proven, the evidence was improper, as not calling for an opinion on a mere question of skill or science, but for a *general conclusion* involving the *decision* of a mixed question of *law and fact*. Whether there was any *variation* in the *quality* of the *bulk* of the iron from the standards contained in the contract analyses, was a question of *fact* to be determined from the weight of evidence, and whether there was a *material* variation was a question of law; and neither of them was a *question* of skill or science, as those terms are used in the law of evidence. The jury were the exclusive judges of the fact acting under the *guidance* of the court; and it was their province to weigh the evidence and determine, in the light of the rules of law laid down by the court, whether there was a *material variation* from the terms of the contracts. It was absurd to permit two chemical experts to practically determine the whole controversy.

These experts were competent merely to ascertain and testify to the fact, *how much* phosphorus was contained in the samples analyzed by them. This was a fact which could be ascertained only by a chemical analysis, and hence a chemist could be properly called to prove the *method* pursued and the *results* obtained from his analysis. He could not pass an opinion upon any *other* analysis than his own unless he condemned the process itself as unscientific or he was present when it was made, and verified the process himself. And certainly he should not be permitted to usurp the functions of the court and jury, by *assuming* that all of the analyses were correct, or sufficiently so for the purposes of the action, and, notwithstand-

ing the differences in the analyses, deciding that there was *no material variance from the contract stipulations of the parties.*

Ferguson v. Hubbell, 97 N. Y., 507.
People v. Miller, 96 N. Y., 408.
Jefferson Ins. Co. v. Cotheal, 7 Wend., 72.
Franklin Ins. Co. v. Gurner, 100 Penn., 267.
N. E. Glass Co. v. Lowell, 7 Cush., 319.
Lincoln v. Barne, 5 Cush., 590.
Mayhew v. Fullner, etc., 76 Me., 100, 111.
Lime Rock Bank v. Hewett, 50 Me., 267.
Knoll v. State, 55 Wis., 249.
Hardy v. Chesapeake Bank, 51 Md., 566.
Moore v. Chicago, etc., R. R. Co., 65 Iowa, 505.
Hoevner v. Koch, 84 Ill., 408.
Yost v. Conroy, 92 Ind., 464.
Wylly v. Gazan, 69 Geo., 506.
Kirby v. Ins. Co., 9 Lea., 142.
Milwaukie, etc., R. R. Co. v. Kellogg, 94 U. S., 469.
U. S. v. Willard, 1 Paine, 539.
The Blackstone, 1 Lowell, 485.

"The questions related to a *vital* point in the case. The witnesses were asked their opinions upon a *controlling* issue which was to be determined by the jury. In answering the questions they did not testify to facts, and they did not tell what they knew as matter of knowledge. They simply expressed *opinions* which were based upon the facts (results of the analyses) as they existed." "Witnesses who are skilled in any science, art, trade or occupation, may not only testify to facts but are sometimes permitted to give their opinions as experts. This is permitted because such witnesses are supposed, from their experience and study, to have peculiar knowledge upon the subject of inquiry which jurors generally have not, and are thus supposed to be more capable of drawing conclusions from facts, and to base opinions upon them, than jurors generally are presumed to be. Opinions are also allowed in some cases where, from the nature of the matter under investigation, the facts cannot be adequately placed before the jury so as to impress their minds as they impress the minds of a competent, skilled observer, and where the facts cannot be stated or described in such language as will enable persons not eye-witnesses to form an accurate judgment in regard to them, and no better evidence than such opinions is attainable. But the opinions of experts *cannot* be received where the *inquiry* is into a subject, the nature of which is not such

as to require any *peculiar* habits or study in order to *qualify* a man to understand it. It is *not* sufficient to warrant the introduction of expert evidence that the witness may know *more* of the subject of inquiry, and may *better* comprehend and appreciate it than the jury; but to warrant its introduction, the *subject* of the inquiry must be one relating to some trade, profession, science or art in which persons instructed therein, by study or experience, may be supposed to have *more* skill and knowledge than jurors of average intelligence may be presumed generally to have. The *jurors* may have *less* skill and experience than the witnesses and yet have *enough* to draw their own conclusions and do justice between the parties. Where the facts can be placed before a jury, and they are of such a *nature* that jurors generally are just as competent to form opinions in reference to them and draw inferences from them as witnesses, then there is *no occasion* to resort to expert or opinion evidence. To require the exclusion of such evidence it is not needed that the jurors should be able to see the facts as they appear to eye-witneses, or to be as capable to draw conclusions from them as some witnesses might be, but it is sufficient that the facts can be presented in such a manner that jurors of ordinary intelligence and experience in the affairs of life can appreciate them, can base intelligent judgments upon them, and comprehend them sufficiently for the ordinary administration of justice. The rules admitting the opinions of experts should not be unnecessarily extended. Experience has shown that it is much *safer* to confine the testimony of witnesses to facts in all cases where that is practicable and leave the jury to exercise their judgment and experience upon the facts proved." "It is generally safer to take the judgments of *unskilled jurors* than the opinions of *hired* and generally *biased* experts."

Ferguson v. Hubbell, 97 N. Y., 512–514.

"The issue was was not whether, in the *opinion of witnesses*, or of a class of people, the photographs were indecent or obscene (or whether the results of the analyses were at variance, or material variance, from the terms of the contract), but whether they were so *in fact*, and upon this issue witnesses could neither be permitted to give their own opinions or to state the aggregate opinion of a particular class or part of the community. To permit such evidence would put the witnesses in the place of the jury, and the latter would have no function to discharge. The testimony of

experts is not admissible upon matters of judgment within the knowledge and experience of ordinary jurymen."

People v. Miller, 96 N. Y., 412.

"The questions proposed were properly excluded. The general scope and effect of the questions was to show that the location of the boiler, and the erection of the boiler-house attached to the mill, in the manner in which they had been shown to have been located and erected, produced such a *variation* from the mill as described in the policy, as *materially to increase* the risk. Whether the *risk was increased* by the supposed alteration in the former construction of the mill, was *not* a matter of skill or science, so as to justify this description of evidence. The witness was asked to give his *opinion* upon the *force and effect of the evidence upon this point*, which had been given in the case, and which was again repeated to him. He was no more competent to decide that question than the jurors were."

Jefferson Ins. Co. v. Cotheal, 7 Wend., 77.

"How any person can be said to be an expert in that which is not and cannot be followed as a business, or in that which must necessarily result from observation of a character so general that it must be common to every person, we cannot understand. The *opinion* of a witness who neither knows, nor can know, more about the subject-matter than the jury, and who must *draw* his deductions from *facts* already in the *possession of the jury*, is not admissible. Were it otherwise the opinions of jurors upon the most obvious facts, might be always shaped for them by the testimony of so-called experts, and thus would a case be constantly liable to be determined, not by the opinions and judgment of the jury, but by the opinions and judgment of witnesses."

Franklin Ins. Co. v. Gurner, 100 Penn., 273.

"It is not because a man has a reputation for superior sagacity and judgment, and power of reasoning, that his opinion is admissible; if so, such men might be called in all cases to advise the jury, and it would change the mode of trial. But it is because a man's professional pursuits, his peculiar skill and knowledge in some department of science not common to men in general, enable him to draw an inference, where men of common experience, after all the facts proved, would be left in doubt."

N. E. Glass Co. v. Lovell, 7 Cush. 331.

"The wi ness said that the *hair* which he had examined, found on the wheelbarrow, and that taken from the skull of the deceased, were from the *head* of the *same person.* The witness reached this conclusion, not from any scientific tests, or peculiarities in the structure of the hair, which an examination by a microscope would disclose, but from the length, magnitude and color, or those obvious marks and resemblances which one person of good vision would observe as readily as another. The *comparison* made required no peculiar skill, no scientific knowledge. The jury were as competent to *make the comparison* from the description given of the hair, and *draw the conclusion* whether it came from the head of the same person, as was the witness. The opinion of the witness as to the fact that the hair came from the head of the same person was not admissible on the ground that the inquiry related to a scientific subject." "That conclusion was the precise fact which the jury were called upon to determine."

Knoll v. State, 55 Wis., 253, 255.

"The questions objected to did not seek the knowledge of the witness as to the genuiness of the hand-writing of the party supposed to have drawn the checks, but sought to elicit the *judgment* of the witness as to the *degree of prudence or caution*, that would likely have influenced the conduct of the party drawing the checks if they had been forged. Whether a forger was less likely to present checks with particular marks upon them than otherwise, was a question that the witness was incompetent to answer. The *jury* were as *competent* to form their *conclusions* from the *marks and indications* on the face of the checks as the witness; and where such is the case the witness is not allowed to give his judgment."

Hardy v. Chesapeake Bank, 51 Md. 599.

"It is a general rule that a witness cannot be allowed to express an opinion upon the *exact question* which the jury are required to decide." "We can see no reason why the general rule should not apply to a case where the question is whether the ditch or highway will be one of *public utility.*"

Yost v. Conroy, 92 Ind., 471, 472.

"A second exception is that the court *refused* to permit the defendants to prove, by experts, experienced in the business of fire insurance, that owing to the *distance* between the elevator and the lumber piles, the elevator would *not* be considered as an *exposure* to the mill or lumber, and would not be considered in fixing a rate

thereon, or in measuring the hazard of mill or lumber. This exception is quite unsustainable. The subject of the proposed inquiry was a matter of *common observation*, upon which the lay or uneducated mind is capable of forming a judgment. In regard to such matters experts are not permitted to state their conclusions." "The *opinion* of underwriters on the *materiality of facts*, and the effect they would have had upon the premium is *not* admissible in evidence. Witnesses are *not* receivable to state their views on matters of *legal* or moral obligation, nor on the manner in which others would probably be influenced, if the parties had acted in one way rather than in another."

Milwaukee, etc., R. Co. v. Kellogg, 94 U. S. 472, 473.

Witnesses acquainted with the mode of accounting at the Treasury cannot be called to give their opinions as to the *effect* of particular charges. "It was, in the first place, calling upon witnesses to explain the *legal effect*, operation and construction of written documents. This was the province of the court. The mode and manner of drawing money and keeping the accounts at the Treasury Department is regulated by law." "The other charge of advances to Baldwin is $29,732.42, pay of the army. And the opinion of the witnesses was admitted to establish the fact, that this was to be expended on account of the regular army excluding the militia. But the account *per se* warrants no such conclusion as will be evident from the laws making the appropriation."

U. S. v. Willard, 1 Paine, 545-547.

"I refused to receive the opinions of experts upon the *prudence* of the master in keeping his steamer at this speed, excepting so far as any question of navigation, such as convenience of steering, etc., was concerned, because, when all the facts are shown, and their bearing upon navigation is explained, the question whether the speed was *moderate*, whether called fact or law, is not one of nautical skill at all, but of sound judgment, which the expert is no more competent to speak of than any one else."

The Blackstone, 1 Lowell, 487.

And it has been distinctly held that one expert is incompetent to pass upon the professional competency or skill of another, or upon the extent of reliance to be placed on his conclusions or results.

Leighton v. Sargent, 31 N. H., 119.

Brabo v. Martin, 5 La., 275.

Within the doctrine of these cases, we submit, that the *opinions* of the experts as to the *extent* or *materiality* of the *variation* of

the results of all the analyses, read in evidence at the time the opinions were received, from the contract standard, were inadmissible. As chemists, the witnesses were no more competent than the court or the jury to form such a general conclusion. The final conclusions of chemical science, for all the purposes of a legal investigation, had been attained in the results of the analyses. The weight or effect to be given to any or all of tho analyses, in reaching the ultimate decision of the vital issue, whether there was a *material variance* from the standard analyses, depended, as a question of fact, upon the *credit* of the witnesses, or as a question of law upon *rules and principles* regulating the rights and liabilities of the parties under their contracts. Chemical experts, as such, would have no peculiar skill or knowledge to assist them in the pursuit of such an inquiry, and hence their opinions were as incompetent as those of any other witness.

2. If, however, the opinions called for did involve matters requiring peculiar skill or knowledge of a particular trade or business, they certainly did *not* involve any question of *chemical science.* They involved merely knowledge and experience gained in the business of *manufacturing iron and steel;* and the art or process of manufacturing the pig from the ore or the steel from the iron, or the knowledge of the limits of certain elements allowable in the iron or steel for different purposes, would form no part of the duty of a professional chemist. The manufacturer determines the limit of phosphorus or other element for himself, and employs the chemist merely to ascertain the fact whether the limit has been exceeded or not. How then can a chemist be presumed to know what does not fall within the line of his professional duty?

The only evidence given to prove the competency of Sharples was as follows: "The witness gave evidence tending to show that he was, by profession, an analytical chemist, and had been for nineteen years; and that he had frequently made analyses of iron to determine phosphorus and other substances, and had analysed substances other than iron for the determination of phosphorus." (Fol. 180.) Chandler was also shown to be an analytical chemist and professor of chemistry in Columbia College. (Fols. 191–193.) But he had had nothing to do with analytical chemisty for seven or eight years, had made no analyses of iron for the determination of phosphorus in ten years, and had analyzed none of the iron in suit. (Fol. 197.) It was then attempted to be shown that he had "actually observed the manufacture of iron," having been

employed as consulting chemist of the Boonton Iron Works in New Jersey for about a year and "visited the works from time to time." (Fol. 205.) But it turned out that he had never been in or about the works but a half dozen times (fol. 206), spending in all "two or three days with one of the proprietors, talking iron with him, examining his results and his products and making analyses for him and talking about the results of the analyses." He had actually on these occasions "watched the running of the furnaces," etc. (Fol. 206–209.)

Whether a witness is qualified to testify as an expert is a preliminary question for the court, whose decision is conclusive, unless it appears upon the evidence to have been erroneous.

Perkins v. Stickney, 132 Mass., 217.

"It must, however, be first shown that the witness is skillful or scientific, or at least has superior actual skill or scientific knowledge *in relation to the question*, before his opinion can be competent. *Mere opportunity for observation is not sufficient.*"

Page v. Parker, 4 N. H., 47, 59.

Experts in chemistry are not necessarily experts in medicine, nor *vice versa*.

People v. Millard, 53 Mich., 64.

Nor does the mere fact that a man is a practicing physician render him competent to give an opinion on a question of *insanity*.

Reed v. State, 62 Miss., 405.
Russel v. State, 53 Miss., 368.

3. But if we are wrong in either of the foregoing positions discussed under this point, then the court clearly erred, as alleged in the second assignment of error, in excluding an answer to the question in the same form put to the witness Wuth. (Fols. 316, 317.) The question was a literal transcript of those put to Sharples and allowed. (Fols. 181, 184, 188.) This witness was not only an experienced chemist, who had devoted many years to analyzing ore and iron for phosphorus, but he was a *steel manufacturer*. (Fol. 304.)

The judgment of the Circuit Court should, therefore, be reversed, and the cause remanded to that court for a new trial.

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Attorneys for Plaintiff in Error,
EDWIN COUNTRYMAN,
Of Counsel.

121-451

121-451

Supreme Court of the United States.

OCTOBER TERM, 1886. No. 181.

THE ALBANY AND RENSSELAER IRON AND STEEL COMPANY,

Plaintiff in Error,

vs.

GUSTAF LUNDBERG,

Defendant in Error.

BRIEF FOR DEFENDANT IN ERROR.

EVERETT P. WHEELER,

Of Counsel.

SUPREME COURT OF THE UNITED STATES.

THE ALBANY AND RENSSELAER IRON AND STEEL COMPANY,
Plaintiff in Error,

against

GUSTAF LUNDBERG,
Defendant in Error.

October Term, 1886.
No. 181.

BRIEF FOR DEFENDANT IN ERROR.

Statement of Facts.

The writ of error in this case was brought to review a judgment of the Circuit Court of the United States for the Southern District of New York, entered upon the verdict of a jury in favor of the plaintiff, Gustaf Lundberg, now defendant in error, against the Albany and Rensselaer Iron and Steel Company, now plaintiff in error. In this brief, for the sake of brevity, the plaintiff in error will be designated, the Company.

The action was commenced December 1, 1881; was tried in May, 1883; judgment was entered August 25, 1883, and the writ of error was sued out September 1, 1883.

The action was brought to recover damages for the failure of the defendant to accept and pay for eight

hundred tons of Swedish pig iron at $48 per ton. The contracts are printed on pp. 20, 21, of Record, as follows:

N. M. Höglund's Sons & Co., Stockholm;

Gustaf Lundberg, Successor to Nils Mitander:

38 Kilby Street,

Boston, February 10, 1880.

I, Gustaf Lundberg, agent for N. M. Höglund's Sons & Co., of Stockholm, agree to sell, and we, Albany & Rensselaer Iron & Steel Co., Troy, N. Y., agree to buy the following Swedish charcoal grey pig iron, viz: 500 tons of brand N B G P H, at a price of forty-eight (48) dollars, American gold, per ton of 2,240 lbs., delivered on wharf [at] New York, duty paid, said iron to be in accordance with an analysis furnished in Gustaf Lundberg's letter of 6th January.

Payment in gold, in Boston or New York funds, within 30 days from date of ship's entry at Custom House; shipment from Sweden during the season, say May next, or sooner, if possible.

The above quantity hereby contracted for to be subject to such reduction as may be necessitated by natural obstacles and unavoidable accidents.

The seller not accountable for accidents or delays at sea.

Signed in duplicate.

Accepted. Gustaf Lundberg.

Accepted.

Albany & Rensselaer Iron & Steel Co.

The analysis referred to is: Phosphorus, three hundredths of one per cent. (.03); sulphur, trace; silicon, nine-tenths of one per cent. (.90). (Table, facing p. 78.)

N. M. HÖGLUND'S SONS & CO., Stockholm; GUSTAF LUNDBERG, Successor to NILS MITANDER,

38 KILBY STREET, BOSTON,

February 11, 1880.

I, GUSTAF LUNDBERG, agent for N. M. Höglund's Sons & Co., of Stockholm, agree to sell, and we, Albany & Rensselaer Iron & Steel Co., Troy, N. Y., agree to buy, the following Swedish charcoal grey pig-iron, viz.: 300 tons of brand S B V E & NB^{B} B K, at a price of forty-eight ($48) dollars American gold, per ton of 2,240 lbs., delivered on wharf, New York, duty paid. Said iron to be in accordance with the analysis as furnished the Albany & Troy Iron & Steel Co. in Mr. Lundberg's letter of 6th February, 1880. Payment in gold in Boston or New York funds, within 30 days from date of ship's entry at custom house. Shipment from Sweden during the season, say May next, or earlier if possible.

The above quantity hereby contracted for to be subject to such reduction as may be necessitated by natural obstacles and unavoidable accidents.

The seller not accountable for accidents or delays at sea.

Signed in duplicate.

Accepted.

GUSTAF LUNDBERG.

Accepted.

THE ALBANY & RENSSELAER IRON & STEEL CO.

The analysis referred to is: Phosphorus, twenty-four one-thousandths of one per cent. (.024); sulphur, two-hundredths of one per cent. (.02); silicon, seventy-five-hundredths of one per cent. (.75). (Record, table facing p. 78.)

The company refused to take the iron, and Lundberg thereupon notified the company that he would sell the

same on its account. He did resell the iron at a loss, and this action is brought to recover the difference between the contract price and the selling price, and the expenses of the resale.

The complaint states four causes of action: 1. On the contract to sell 500 tons (pp. 3, 4). 2. On the contract to sell 300 tons (pp. 4, 5). 3. For the recovery of the freight on the iron from New York to Troy, which the company paid and which Lundberg was obliged to pay in order to get the iron (p. 6). 4. For Lundberg's services in and about reselling the iron (p. 6).

The answer admits that the iron was delivered to the company at New York, and that it transported the same to Troy, pp. 12, 13, (40, 41, 45, 46), but avers that it refused to accept or pay for the same, pp. 12, 13, (42, 48). It further admits that it did use a part of the lot of iron shipped under the second contract, and that it has paid for the portion so used by it, pp. 13, 14 (48). The defenses set up in the answer, are as follows:

1. That the action should have been brought in the Northern District of New York. Record, p. 10, (35, 36). This defense was not pressed at the trial.

2. That the contracts were made with N. M. Hoglund's Sons & Company, and not with Lundberg, and that he had no right to sue thereon, pp. 10, 11, (36–38).

3. That the iron tendered the company was not in accordance with the warranty which the answer alleged was made by Lundberg, to wit, that the iron described in the first contract, was of the character specified in a certain analysis, that is to say, phosphorus, .03; sulphur trace; silicon, .90; Record, p. 11 (38–40).

4. That the iron which was tendered the company, in pursuance of the second contract, was not according to the analysis, on the faith of which the same was sold; pp. 12, 13 (44 45).

5. The answer denies that the Company refused to return the iron to Lundberg, except on payment of the freight from New York to Troy, which the Company had paid. Record, p. 14 (50-51).

6. The answer denies that Lundberg performed for the Company any services in and about the sale of iron on the Company's account. Record, p. 14 (51-52).

7. That the payment by the Company for the iron which it had actually used, and the payment by Lundberg of the freight from New York to Troy which the Company had paid, and the relinquishment by the Company of all claims on its part for a breach of the contract were in accord and satisfaction for all claims which Lundberg had upon the contract. Record, pp. 14, 15 (52-54).

The verdict for the plaintiff Lundberg, was upon the three first causes of action, p. 128.

The defense that was chiefly pressed on the trial was that arising upon the claim that there was a breach of the warranty which had been made upon the sales of the iron.

Lundberg's letters containing his statements as to the analyses are not printed in the Record, but the analyses themselves are on the first line of the table facing p. 78.

A large number of experts were examined for Lundberg and the Company, and many analyses made from borings taken from one or more pigs of the iron, were put in evidence. These number twenty in all, and a table of them is to be found in the Record facing p. 78.

At the conclusion of the plaintiff's case, the defendant moved the Court to direct a verdict for the defendant upon six grounds, which are stated in the brief for the plaintiff in error. Record, pp. 78, 79 (215-217).

At the close of the testimony, the defendant asked

the Court to direct a verdict on the grounds stated in the brief for the plaintiff in error.

Record, p. 121.

There are numerous requests to charge, and some exceptions to the charge as made. Record, pp. 126–128 (339–345). These exceptions will be considered in detail later in the brief, but they present in various forms a single proposition, to wit, that if there was an infinitesimal difference between the iron as tendered, and the warranted analysis, the Company was not bound to receive the iron. The Court charged that an infinitesimal difference does not necessarily avoid the contract. Record, p. 123 (332). What was meant by "infinitesimal," so far as the contract in reference to the phosphorus was concerned, appears very distinctly from the request which was charged, Record, p. 126 (341), that if "the iron differed as much as one-hundredth of one per cent. in excess of the limit of phosphorus stated in the analysis referred to in the contract, that constituted a breach of the warranty, and entitled the defendant to refuse to receive the iron." In other words, the Court held the construction of the contract to be that the difference must be a real difference, in order to entitle the defendant to refuse the iron. This is important in view of the evidence, which in this particular was but a reproduction of the correspondence between the parties before the suit was brought. The whole contention between them in the correspondence was as to the extent of phosphorus in the iron. The percentage of silicon and sulphur was not insisted upon. This is concisely stated in a letter written by the vice-president of the company, Selden Marvin, June 29, 1880. Record, p. 104 (283). "The difference one way or the other in the amount of sulphur in the iron would not be so important to us as the phosphorus. We bought the iron on an analysis showing very low in phosphorus, and cannot consent to take it upon our purchase unless it is to

be in accord with the analysis." And again in a letter of July 17, 1880. Record, p. 105 (285). "Phosphorus was the element represented as being very low in quantity."

To the same effect is the testimony of Elliot, a chemist who went at the request of both parties to confer with the defendant's chemist, in regard to the analysis of the iron (Record, p. 51, 148), and of Lundberg, who had an interview with Selden Marvin, the secretary and treasurer of the defendant, in September, 1880, as to his reasons for refusing to receive the iron.

Record, p. 59 (166); pp. 63, 64 (176, 177).

The exceptions to the evidence, are of two classes:

1. To evidence taken in Sweden, tending to show that the iron in question, was of three well known brands, that these brands had been for several years, made at the same furnaces, out of ores from the same mines, and that experience had shown that the character of the ores was uniform, and that the character of the iron manufactured from them was uniform. That although the particular lots of iron which were shipped in compliance with the contracts in suit, were not themselves analyzed, yet that other iron made from the same ores in the same furnaces, and by the same process, had been analyzed, and that the analysis correctly represented the character and quality of the iron as shown by the test of actual experiment and use. These exceptions will be considered more in detail hereafter.

This species of iron, known as Swedish gray iron, is smelted with charcoal. Record, p. 84 (229). When melted, it is run into moulds made in the sand, each of which has in the bottom, the letters giving the brand of the iron. Record p. 82 (224). Each of these pigs weighs on the average, about 200 pounds.

The effect of phosphorus upon the iron, is to make it more brittle. Record, p. 89 (242), 90 (246). When iron is desired for a special purpose, the

right proportion of phosphorus can be obtained by mixing in the furnace, pigs having a larger per centage than is desirable, with pigs having a smaller percentage than is wanted, and in this way the desired quality is obtained. Record, p. 80 (219).

The second class of exceptions to the testimony is to the character of the questions put to the experts called by Lundberg, Prof. Sharples, of Boston, and Prof. Chandler, of New York. They were severally asked to express an opinion upon the proposition, whether the result of the several analyses made by the several chemists on one side and the other, indicated a material variance as to the quality and constituent parts of the bulk of the iron from which the samples were respectively taken from the percentages according to which the iron was sold. The questions put to Prof. Sharples are on pp. 65 to 70. Those put to Prof. Chandler on pp. 77 and 78. These also will be considered more in detail hereafter.

POINTS.

First.

The action was properly brought in the name of Gustaf Lundberg.

1. The contract on its face is made with him. "I, Gustaf Lundberg," it says, "agree to sell." The execution follows the language of the contracting part. This is: "Accepted, Gustaf Lundberg."

His name, as well as that of the principals, appears in the caption, giving their address in Stockholm, and his in Boston.

It appears on the face of the contract itself, that it was in the minds of the parties, that the proper form

of execution by an agent to bind his principal, was, that which actually was adopted by the Treasurer of the defendant. The contract is executed on behalf of the company, "The Albany and Rensselaer Iron and Steel Company." Obviously, if it had been intended by the parties that the Hoglunds were the actual contracting parties, it would have been executed. "N. M. Hoglund's Sons & Company, Gustaf Lundberg, Agent." But this is not the form of execution. The contract is actually executed by Lundberg in his own name.

In Whitney *vs.* Wyman, 101 U. S., 392, the Court say:

"The question is all one of intent; and the Court, being untrammelled by any other consideration, is bound to give it effect. As the meaning of the law-maker is the law, so the meaning of the contracting parties is the agreement. Words are merely the symbols they employ to manifest their purpose that it may be carried into execution. If the contract be unsealed and the meaning clear, it matters not how it is phrased, nor how it is signed, whether by the agent for the principal, or with the name of the principal by the agent or otherwise. The intent developed is alone material, and when that is ascertained it is conclusive. When the principal is disclosed, and the agent is known to be acting as such, the latter cannot be made personally liable unless he agreed to be so."

In the case the letter ordering the goods was signed by the defendants in their own names, but with the words, "Prudential Committee Grand Haven Fruit Basket Co." added to their names, and the letter from the vendor accepting the order was directed to this company, and not to the defendants. It was held that they were not liable personally, on the ground that it distinctly appeared, on the face of the correspondence, that it was not their intention to bind themselves personally.

In the Mechanics' Bank *vs.* The Bank of Columbia, 5

Wheaton, 326, the Court held that extrinsic evidence may be resorted to to show whether an instrument in suit is a contract of the agent or of the principal. This rule was approved in Metcalf *cs.* Williams, 104 U. S., 97.

This rule is thus stated in Story on Agency, section 160*a* (a section added to the original text, after the decisions were made in reference to foreign agents):

"If the agent possesses due authority to make a written contract, not under seal, and he makes it in his own name, whether he describes himself to be an agent or not, or whether the principal be known, or unknown, he, the agent, will be liable to be sued, *and be entitled to sue thereon*, and his principal also will be liable to be sued, and be entitled to sue thereon in all cases, unless from the attendant circumstances, it is clearly manifested, that an exclusive credit is given to the agent, and it is intended by both parties that no resort shall in any event be had by or against the principal upon it."

In the light of the extrinsic evidence to which the attention of the Court has been called, must it not be plain that it was the intention of the parties that Lundberg should be the responsible party, leaving him to look to his principals for any reimbursement which occasion might require.

The rule once was that the presumption, as matter of law, when the principal was a foreign principal, was that credit was given to the agent exclusively.

To some extent this rule has been modified in this Court, but the good sense of the rule still exists, that a person making a contract in this country would be more likely to look to the resident general agent of a principal residing in Sweden, than he would to the Swedish principal himself.

The English cases unquestionably hold that this suit is properly brought, because it is nowhere stated in the

body of the contract that it is executed on behalf of the Swedish principals.

Parker *vs.* Winlow, 7 Ell. & Bl., 942.
Paice *vs.* Walker, L. R. 5 Excheq., 173.

To the same effect are:

De Witt *vs.* Walton, 9 N. Y., 571.
Moss *vs.* Livingston, 4 N. Y., 208.

It is true that Paice *vs.* Walker was questioned in Gadd *vs.* Houghton, L. R. 1 Ex. Div., 357, but the opinion of the Court of Appeals in the latter case, shows clearly that they rested their decision, on the ground that it distinctly appeared in the body of the contract in that case, that it was executed solely on behalf of the principal.

There is, however, another ground on which the right of action in the name of Lundberg, can be sustained. The tendency of late years has been to treat the question whether an agent intended to bind himself personally by contract, as a mixed question of law and fact, upon all the circumstances of the case. In the case at bar, there was no request made, to submit this as a question of fact to the jury, so that if it be treated as involving a question of fact, there was no error in refusing to direct a verdict.

The distinction has sometimes been taken between contracts upon which an agent could sue, and those upon which he was personally liable. There is this reason for making the distinction between the two classes of cases. If the agent brings a suit upon a contract, he thereby proclaims in the most positive language possible, that he understood it to be a contract personally binding upon him, and where this is the case, there would seem to be no good reason why an action upon it should not be held to be maintainable by him. It would be unreasonable that a merchant who has the right to sell iron, and to receive and give acquittance

for its price, should not have the right to sue for the price if it is not paid.

The common law cases on this subject are collected in Considerant *vs.* Brisbane, 22 N. Y., 389.

2. Whatever may be the opinion of the Court on the question just argued, it would seem to be clear under the Statutes of the United States and of New York, that the action was properly brought in Lundberg's name.

The Act of June 1st, 1872, U. S. Revised Statutes, section 914, provides as follows:

Section 914. "The practice, pleadings, and forms and modes of proceeding in civil causes, other than equity and admiralty cases, in the Circuit and District Courts, shall conform, as near as may be, to the practice, pleadings, and forms and modes of proceeding existing at the time in like causes in the Courts of Record of the State, within which such Circuit or District Courts are held, any rule of Court to the contrary notwithstanding."

The Code of Civil Procedure of the State of New York, in the Circuit Court, for the Southern District of which this action was brought, provides as follows:

Section 449. "Every action must be prosecuted in the name of the real party in interest, except that an executor or administrator, *a trustee of an express trust*, or a person expressly authorized by statute, may sue without joining with him the person for whose benefit the action is prosecuted. A person, *with whom or in whose name, a contract is made for the benefit of another*, is a trustee of an express trust, within the meaning of this section."

The question under consideration is purely formal and relates exclusively to the mode of proceeding in civil causes. Here was a written contract. At the time this action was brought there was a question upon the authorities as to whether Lundberg, or the Swedish firm, should sue upon it. Taking advantage of this

provision of the New York Code which, as we have shown, had been adopted by the Federal Statute, Lundberg, with whom and in whose name the contract had been made for the benefit of another, sued in his own name without joining with him the persons for whose benefit the action was prosecuted. There is no doubt that in a Court of the State of New York the action would be properly brought in his name. A person with whom a contract of this description is made, is a trustee of an express trust within the definition of the Code.

Considerant *vs.* Brisbane, 22 N. Y., 389.
Cummins *vs.* Barkalow, 1 Abb. Ct. App., Dec., 479.
Rowland *vs.* Phalen, 1 Bosw., 43.

The construction of the United States statute just quoted, is well settled. Under its provisions the question as to who should be made parties to actions at law in the U. S. Courts must be determined by the practice and modes of proceeding existing at the time in the State Courts.

Sawin *vs.* Kenny, 93 U. S., 289, was the case of a contract which on its face appeared to bind the agent only. He was sued with the principal under a provision of the Code of Arkansas, which authorized all or any persons severally liable upon the same obligation or instrument, to be included in the same action. Upon a motion in arrest of judgment after a verdict in favor of the principal and against the agent, the Circuit Court held that under the Code of Arkansas, judgment could be rendered against the agent and in favor of the principal, and that this furnished a rule of practice for the Courts of the United States in that State. This judgment was affirmed in this Court, the Court saying, "Substantial justice has therefore been done between these parties, and by the operation of these remedial provisions of the code, the sacrifice of substance to mere form and proceeding has been prevented."

Indeed, before the act of 1872, and under the provisions of the judiciary act, this Court had laid down a similar principle which should control the present case.

Thompson *vs.* The Railroad Companies, 6 Wall. 134, 138, was an action brought by the real party in interest, who was not, however, disclosed to be a contracting party on the face of the instrument in suit. It was brought in one of the State Courts of Ohio, and removed by the defendant to the Circuit Court. The plaintiffs, conceiving that as they were not named in the contract, their only remedy was in equity, thereupon turned the petition in the State Court into a bill in equity. They had judgment below, but this Court reversed the judgment on the ground that the action should have continued on the law side of the Circuit Court, and that the effect of the U. S. Statute was to allow the real party in interest to sue in his own name where he could do so under the State statute. The Court say:

"In actions at law, the Courts of the United States may proceed according to the forms of practice in the State Courts, and in such actions they administer the rules of evidence as they find them administered in the State Courts. There was, therefore, no difficulty whatever in the plaintiffs in the State Court, remaining plaintiffs on the record and prosecuting their suit in the same manner they were authorized to prosecute it by the laws of the State."

The Weed Sewing Machine Co. *vs.* Wicks, 3 Dillon, 261 (Dillon and Krekel, JJ.), was an action brought by the principal upon a bond executed to the agent as obligee. The right to sue in the name of the principal, who was the real party in interest, was sustained in the Circuit Court for the District of Missouri, under a statute of Missouri, similar to that of New York already quoted. The Court say:

"It is undoubtedly true that under the provisions of the Missouri Code in respect to parties, quoted in the statement of the case, an action like the present might

be brought in the proper Court by Bartram in his own name, although his principal alone would be interested in the recovery."

To the same effect are

U. S. *vs.* Tracy, 8 Benedict, 1. (Blatchford, J.)

Featherman *vs.* Louisiana State Seminary, 2 Woods, 71. (Woods, J.)

Bennett *vs.* Md. Fire Ins. Co., 17 Albany L. J., 363. (Wallace, J.)

U. S. *vs.* Lawrence, 14 Blatchf,, 229. (Benedict, J.)

Second.

Substantial conformity with the warranty all that is necessary.

A warranty of the quality of merchandise is satisfied if the goods sold conform substantially to the warranty. *De minimis non curat lex.* The circumstance to which the Court draws attention in the charge; Record, p. 123 (331), that "no two of these analyses which have been presented before you are precisely alike," is the best evidence that it could not have been within the intention of the parties that the iron should have been "in accordance with the analysis," to an infinitesimal degree.

The testimony of the Company's witnesses corroborates this view:

"Anything under .01 of one per cent. is a fair duplicate analysis;" Record, p. 93 (254). If the variation is more than this, a deduction is made from the contract price. Record, p. 95 (260).

The real question upon this branch of the case is: What does the contract mean? What obligation did the vendor incur by saying in the contract that the iron was to be "in accordance with the analysis?" "Accordance" is defined to mean—"conformity." "Conformity" is defined to mean—"similitude, resemblance." Can the Court say as matter of law that iron

varying less than one ten-thousandth part from a given analysis, is not similar to it. Similitude is not identity. *Nullum simile est idem.*

The most important rule in the construction of contracts is that which requires the Court to take into consideration the facts of the case and the nature of the business in relation to which the contract is made, so that in construing the contract it shall occupy precisely the position that the parties occupied when they made it.

Nash *vs.* Towne, 5 Wall., 689.

Some of these facts are disclosed by the bill of exceptions, and a proper consideration of them is essential to the understanding of the contract.

1. The iron in question comes in cakes or pigs, flat, and weighing from 100 to 200 pounds; some of which were produced in Court. Record, p. 58 (165), p. 81 (221, 222). The phosphorus is not uniformly distributed through every part of these pigs, but varies in the different portions of them for some reason that none of the scientific men who were examined upon the trial, appear to have explained. Record, pp. 51 (148, 149), 66 (182), 78 (212). These pigs are made in furnaces which hold from ten to fifty tons, and the result of each operation is called a cast. Record, pp. 66, (182), 91, (248).

2. When these pigs are to be used in the process of manufacturing the finer qualities of steel, they are melted in a Bessemer converter into one mass. Record, p. 89 (244). That the phosphorus in the resultant steel will be equally distributed, is shown by the fact that it is usual to mix in the converter iron containing different percentages of phosphorus in order thus to produce the desired result. Record, pp. 87 (239), 91 (250). Some iron has only a trace of phosphorus, p. 97 (264).

3. The samples examined were borings taken from a few of these pigs, and some of them were in quantity so

small that they were sent by mail. Record, p. 82, (225). Most of those in reference to which the defendant's witness testified, were taken from the same pigs, one of which was "exceptionally small." (Record, pp. 80 (218), 81 (222), 82 (223, 224), 83 (227), 84 (230). It must be obvious to the Court from the consideration of these facts of the case, that it could not have been the intention of the parties that the vendor should warrant that the phosphorus was evenly distributed in any one pig, or that the ingredients of each pig should be exactly, and to the one thousandth part of one per cent., identical. What they did mean obviously, was this: that the character of the iron was such that when the pigs should be melted together, the analysis would fairly represent the bulk of the charge, that is to say, of the aggregate number of pigs composing the twelve or twenty tons put into the converter.

It may be that if only one pig should be analyzed, and the result of that analysis should indicate an excess of phosphorus in that particular pig, it might raise a presumption that the bulk of the iron did not correspond with the sample. But when as in this case, the analyses differ—those made for Lundberg differing widely from those made for the Company, and those made for the Company differing amongst themselves, it would seem plain that a question was presented to the jury, as to whether the bulk of the iron was fairly represented by the analysis upon the faith of which the iron was sold.

The only case which we have discovered which considers fully the effect of a guaranteed analysis is Towerson *vs.* The Aspatria Agricultural Soc., 27 Law Times Rep., N. S., 276. The article analyzed was guano. Mr. Justice Willes, delivering the unanimous opinion of the Exchecquer Chamber, in discussing the construction to be put upon the warranty as to the analysis, said:

"He, (*i. e.* arbitrator as agreed by the parties,) must deal with the analysis as an analysis taken of portions of the bulk in a fair way as merchants do, so as to have a fair example of the bulk, that would not per-

haps precisely represent the sort of thing that the buyer and sellers are dealing with in its chemical equivalents, *or in which the decimals may be strictly correct*, but which will, when taken all round, be the sort of thing, and of the character that the parties are buying and selling when dealing with guano, the general character of which guano the buyer wished to have guaranteed by the seller before he bought." Willes J., said to Holker, who argued for defendant, "Nobody argues for more than this, that the seller intended to guarantee that the analysis was a proper and fair analysis, when made, of the bulk out of which the goods were supplied."

In Schnitzer *vs.* Oriental Print Works, 114 Mass., 123, the sale was by sample. A custom was proved that upon a sale of Persian berries contained in several bags, the sample would represent the average quality of the entire lot, and not the average of the amount contained in each bag. The Court say:

"We cannot see, that, as matter of law, a custom in a particular trade, to regard a sample as representing the average quality of an entire cargo or lot of merchandise may not have a reasonable foundation, and be a good and valid custom, entering into the contracts of parties. To a greater or less degree, it is necessarily so in all cases, where the sale is of articles in their nature not entirely uniform in quality. A sample represents the character of a larger mass only approximately. We can conceive that in respect of some articles, and for some purposes, uniformity of quality may be of essential importance. In others, and for other purposes, it may be of very little consequence. In the latter case, the purchaser may have his full rights, if he obtains, in the entire quantity delivered, the aggregate or average of quality and value indicated by the sample. The fact that the berries were contained in 26 separate bags, does not necessarily imply an agreement that each bag shall be equal to the sample; or that the comparison is to be made separately with each bag. Whether or not that was the proper mode of applying the standard of quality, was a question of fact, depending upon the nature and intended use of the article, the customs of the trade, and all the circumstances of the case. It was properly submitted to the jury."

In Pope *vs.* Filley, 9 Fed. Rep., 65, 71, McCrary, J., said:

"It is not necessary that they should prove that

every individual pig was alike. It is necessary that they should show that the lot, as a lot, came up to the description given in the contract."

See also, Hargous *vs.* Stone, 5 N. Y., 73, 94.

The rule is well stated by Senator Mack, in his dissenting opinion in

Waring *vs.* Mason, 18 Wend., 425, 436.

"It is a just and salutary rule that a sale effected confessedly by the exhibition of a sample, where the purchaser has no means or opportunity of examining the article in bulk, should imply a warranty that the article shall not only be of the same kind, but of the *average quality* with the sample exhibited."

The proposition thus stated is not at variance with the prevailing opinion. It was not that upon which the case turned.

In the present case the verdict establishes that the bulk of the iron tendered varied less than one hundredth of one per cent., that is to say, less than one ten-thousandth part. P. 126 (341.) Such a variation is always disregarded. P. 93 (254); 95 (260); 89 (244).

Many cases can be cited, which require exact compliance with the terms of a contract. But on examination all these will be found to apply only to those terms which are susceptible of exact determination. No such rule has ever been applied to cases like the present, where the proof on both sides is that the precise percentage of phosphorus is not determinable with greater accuracy than the one ten-thousandth part. In other words, the agreement is that the iron shall be of the quality naturally to be expected from the given analysis; but it does not import a warranty that no variation from this analysis would be disclosed by other analyses; still less that samples from each pig would yield precisely the same results as the analysis mentioned in the contract.

Third.

Ruling and Evidence as to Silicon.

The point is also taken in the motion to direct a ver-

dict, p. 79 (216), that the analyses attached to the contract stated that the amount of silicon in one case was .75 of one per cent., and in the other .90 of one per cent., and that all the analyses proven on the part of the plaintiff directly showed that there were more than these amounts of silicon respectively in these brands of iron. There is also a separate motion to direct a verdict on the same ground, as to the second contract. P. 79 (216). The exception to the refusal to direct a verdict on this ground is not tenable either on the facts or on the law.

As to the first contract in which the percentage of silicon mentioned in the analyses was .9 of one per cent., the first Sharples analysis gives only .72 of one per cent., which is less than the guaranteed analysis, and one of the Bertolet analyses gives for silicon, .813 of one per cent., which is also less, while one of the Sherrerd analyses gives 961, and the Hills analysis, .96, which was a very small difference, that is to say, .36 of one per cent. of the amount stated in the guaranteed analyses. In the case of the contract for three hundred tons, the brand NBBBK is reported in one of the analyses as having a percentage of silicon of .69 of one per cent., while the amount stated in the contract is .75. The SBVE brand is reported in several of the analyses as .77, .781, .769, all of which are almost exactly the same as the amount stated in the contract, .75.

The Court certainly cannot say, as matter of law, that so small a variation as those stated in these analyses is a real variation.

2. The facts in evidence show that silicon which is the element which in combination with oxygen makes sand, p.95 (261), is a necessary element in the conversion of iron into steel, and that the process of oxydizing the silicon, adds to the heat ; p. 96 (261). After this change takes place, the silicon is eliminated ; p. 87 (238). The testimony further is that the percentage of silicon varies much in the different pigs from the same cast, p. 94 (258). In addition to these facts thus expressly stated by the

witnesses, it was shown that the pigs were cast by pouring melted metal into sand moulds ; p.82 (223). In many cases particles of the sand necessarily adhere to the surface of the pigs, and in making the boring from the pig for the purpose of getting a sample for analysis, it might readily be that a grain or two of sand would intermingle with the borings, and this would be sufficient in itself to account for the variation in the reported analyses of silicon. Of this, there is the positive testimony of Prof. Sharples, p. 68 (188) :

"The variation in the silicon is not greater than it is customary to find working on different samples, especially when the source of error, which is always present, of a little sand from the pig is considered." When asked as to the second lot he testified, p. 68 (189) : "The silicon is .973, a variation of two tenths of one per cent., which variation can be easily accounted for by the difference between the amount of sand and slag in the samples."

The testimony of Wuth is to the effect that any difference shown as to silicon was immaterial ; pp. 114, 115 (307, 308).

This was objected to. Whether the questions put to him were perfect in form need not be considered because his answers stated facts, which must have been in the minds of the contracting parties ; and which aid the Court in the construction of the contracts, and in determining the meaning of the warranty. Evidence of such facts is always material, so that the Court may avail itself "of the same light which the parties had when the contract was executed."

Nash *vs.* Towne, 5 Wall., 689.

Fourth.

Exceptions as to Resale.

1. The objection was taken on the trial on the motion to direct a verdict for the defendants, and also by objections to the testimony of Lundberg as to the resale, pp. 54, 55, p. 121 (324), that the plaintiff's notice of resale, given December 4, 1880, was given too late. Record, p. 21 (72).

It appears that as late as September, 1881, Lundberg had an interview with Selden Marvin, the Secretary and Treasurer of the company, p. 57 (163), in reference to the quality of the iron, and the obtaining of additional samples. Additional samples were furnished by the company at this interview for the purpose of having analyses made, pp. 57, 59 (163 to 166). After this interview, analyses were made, and finally Mr. Marvin, November 15, 1880, refused to take the iron. His letter is as follows:

"TROY, N. Y., November 15, '80.

GUSTAF LUNDBERG, Esq.,
38 Kilby St., Boston, Mass.

Dear Sir.—Yours 13th inst rec'd. We were without the information wanted upon which to have replied to you definitely until within a few days. We are now prepared to say we cannot receive the iron upon our contract with you; this we have previously stated, and now beg to reiterate it.

Very truly,
SELDEN MARVIN."

The same point is also raised on p. 127 by the first and second exceptions to the charge as given.

The Court charged that it was necessary for Lundberg to give notice of re-sale within a reasonable time, and that if the final refusal to take the iron was not made until November 15th by the letter on p. 57 of the record, which, of course, would not

be received by Lundberg until the following day, and he gave notice of re-sale on the 4th of December, that this would be a reasonable time, p. 122 (328).

The Court submitted to the jury the question whether negotiations were pending between Lundberg and the Company upon the 15th of November, when it was conceded a final refusal was made. The evidence on this subject was conflicting, Lundberg testifying in one way and Marvin in another, and the question became therefore a question of fact, and was properly submitted to the jury.

This Court cannot review the weight of the evidence.

Lancaster *vs.* Collins, 115 U. S., 222.

2. It was not necessary that the sale should be made immediately after the notice.

The rule of law on this subject was well stated in the charge; p. 125 (337):

"It was his duty, after he received notice that the iron would not be received by the defendant, to sell it within a reasonable time thereafter, and you are to say, upon the evidence, whether he did so or not. If you find that he did, then you must find further that he sold it fairly, honorably, and for a reasonable price—for the best price that the market afforded; and if you find that any of these sales were made for less than the iron was reasonably worth in the market—less than he could have obtained for it by diligence—then I think I will say to you that the defendant is entitled to have the whole iron that was resold by the plaintiff charged at the highest market price which he received, but you are to say, upon all the circumstances of the case, whether or not the plaintiff did use due diligence in disposing of it, and you will remember that the last of it was disposed of in August, 1881."

It is argued that the market may fall and thus increase the vendee's loss. This possibility cannot impair the vendor's right to resell according to the usage of business and his own best judgment. He has the option either to give notice to the vendee within a reasonable time, that he will sell the goods, or to

keep them. In the former case, the measure of damages, is the difference between the contract price and the net avails of the sale. In the latter, it is the difference between the contract price and the market price at the time the vendee should have received the goods. The course of the market would determine whether the vendor would gain or lose by giving notice of resale. If the market went up, he would not recover so much; if it fell, he would recover more. But, that he has the option, is well settled.

Whitney *vs.* Boardman, 118 Mass., 242.
Haines *vs.* Tucker, 50 N. H., 307, 313.
Hayden *vs.* Demets, 53 N. Y., 426.
Pollen *vs.* Le Roy, 30 N. Y., 549.

Indeed he may keep the goods as bailee for the vendee and recover the contract price; in which case, of course, a fall in the market would be at the vendee's risk.

Shawhan *vs.* Van Nest, 25 Ohio St., 490.
Hayden *vs.* Demets, 53 N. Y., 426.

In this case there was no evidence that the iron, could have been sold at an earlier day, or for a better price. It was a special article, and desirable for special purposes, p. 89 (244). For steel rails, it was no better than cheaper iron, p. 92 (252), 98 (267). The plaintiff offered it to the only persons who would be likely to require that quality of iron, p. 56 (161). The jury therefore had a right to presume that it was sold "as soon as it could be sold, and for the best price," and that the plaintiff sold all he could at the prices first realized, and the rest as fast as possible.

Applegate *vs.* Hogan, 9 B. Monroe, 69.
Cook *vs.* Brandeis, 3 Metc., Ky. 555.
Saladin *vs.* Mitchell, 45 Ill., 79.

The evidence just referred to was, it is true, uncontradicted. But it involved inferences of fact, which might be drawn either way. Lundberg's testimony,

pp. 55, 56, tends to show that he sold the iron as soon as he could. The company claimed he did not, and it was proper to submit the question to the jury.

Chesapeake Ins. Co. *vs.* Stark, 6 Cranch, 268, 273.

McLanahan *vs.* Universal Ins. Co., 1 Peters, 170, 186.

Where the proof of a material fact depends upon the evidence of an interested party it is error not to submit the case to the jury.

Kimbro *vs.* Bullitt, 22 How., 256, 268.

Elwood *vs.* Western Union Tel. Co., 45 N. Y., 549.

But if it were otherwise, and there was nothing in the testimony for the jury to pass upon as to this question of reasonable time, then there was no error in the refusal of the Court to hold that the sale was made with unreasonable delay. No witness testified that the iron could have been sold sooner for a fair price. No doubt it could have been sent to auction, and sold for what it would fetch, but this would have been a breach of the duty to act in selling as agent and trustee for the vendee, which the vendor owes under such circumstances.

Pollen *vs.* LeRoy, 30 N. Y., 426.

The company therefore cannot complain that the Court refused an instruction which would have been erroneous.

Wiggins *vs.* Burkham, 10 Wall., 129.

3. The company also objected to evidence of the prices realized on the resale, on the ground that the plaintiff himself tried to sell the iron. Record, p. 59 (168). No authority was cited, and no reason alleged for the proposition that it was improper for the vendor himself so to do. It was his business to deal in iron, he was in the habit of selling it, and could have been justly chargeable

with laches, had he omitted to use all possible diligence. It appears from his testimony, that he wrote letters, that he was at Pittsburg and in the West, trying to sell the iron, and he wrote to his usual customers, who were the only persons who would be likely to require that quality of iron,—Record, p. 56 (161), and that he also employed an agent in Philadelphia, who did sell part of the iron. Pp. 59, 60 (168, 169). He stated that in making these sales, he did not put the iron in a broker's hands, and when asked why not, the defendant objected to this question as incompetent. Whether the question as put was competent, need not be considered, because the answer was that the iron was put for sale in the hands of an agent who did sell part of it, although he was not a regular broker. Pp. 59, 60. No motion was made to strike out this answer, and the objection to the question is certainly unimportant.

Schuchardt *vs.* Allens, 1 Wallace, 359.

There was no evidence that the usual method of selling such iron was through brokers.

In this connection an objection taken to Lundberg's evidence, offered to show that the delay in the sale did not work any injury to the defendant may properly be considered, p. 60 (169). It appears from the record that the witness misunderstood the question, and answered in reference to the fall in price between the contract of sale, and the time of the final refusal. This evidently was not responsive to the question, and the witness then undertook to look at his memoranda of prices, p. 60 (170) but so far as appears from the record, no evidence was given on this subject, and no motion was made to strike out the testimony which was given. The objection is therefore not open for consideration in this Court.

Schuchardt *vs.* Allens, 1 Wallace, 359.

Fifth.

Forty-nine exceptions to the admission or exclusion of evidence appear in the record. The general answer to almost all of these, can best be stated in the language of this Court in the

Mining Company *vs.* Taylor, 100 U. S., 37, 42.

"The admission of immaterial or irrelevant evidence is no sufficient reason for reversing a judgment when it is apparent, as in this case, that it cannot have affected the verdict or finding, injuriously to the plaintiff in error."

To the same effect are

Gregg *vs.* Moss, 14 Wall., 564, 569.
Lancaster *vs.* Collins, 115 U. S., 222.

These exceptions will now be considered in detail.

The general line of proof on the part of the plaintiff, was two fold:

1st. A proof from practical tests.

2d. A proof from analyses.

The exceptions to the admission or exclusion of evidence may most conveniently be considered under these two heads.

Sixth.

Exceptions to evidence, relating to Practical Tests.

The line of proof as to the practical tests was this: It was shown by numerous persons in Sweden engaged in the manufacture of iron from the ore, that the iron in question was made from the ores from certain mines in Sweden. These mines had been used for many years,

and the character of the ores from them was known to be uniform, and experience had shown that the iron made from them in the furnaces from which this iron was made, corresponded with the analyses in question, and that when used in the manufacture of steel it was found to correspond with these analyses. All this character of evidence was objected to in various forms, but in substance, on the ground that such evidence was immaterial. If it be immaterial, the result would be that practically, the only possible evidence on the trial of a case of this sort, would be evidence from analyses of small portions of separate pigs.

This is a question of great importance. We submit with confidence, that evidence of this description is even better and more satisfactory than that afforded by the analysis of small portions of separate pigs.

These analyses are really more remote in their character than the evidence afforded by actual use. The argument used on the trial, which will no doubt be used in this Court, was that the iron which had been used in Sweden, and as to which the witnesses testified, was different from that which was sold to the defendant. It certainly was not the identical iron, but neither could either party on the trial, show an analysis of each pig, or even of each lot of 200 pigs. Not more than twenty pigs in all, out of 9,000, were analyzed.

It was proved that the presence of phosphorus in the manufactured product, tends to make it brittle, p. 90 (246), and that its presence in the finer grades of tools is very easily detected, and that a minute quantity of it is sufficient to produce very serious and readily discernible results. Record, p. 97 (264); 99 (271). "We can tell it every time from handling it."

Now, the proof being that none of these results were discernible in the Swedish manufactured product made from the same ores, and in the same furnaces as the iron in question, the only question would be whether the ores from these mines are uniform in their charac-

ter, and the evidence that they are, is derived from actual experience in their use both before and after the sale of the iron in question.

The American witnesses also agree that the amount of phosphorus in the pig can be calculated from the amount in the ore, &c., p. 93 (254); and that "if the ores are pretty uniform, the results will be pretty uniform," p. 91 (249).

This being so, and the proof also being that the distribution of phosphorus in each pig, when minutely analyzed, was not uniform, it would seem to follow of necessity, that the effect of the process in the Bessemer converter, is to distribute uniformly the ingredients of the pigs throughout the whole molten mass, and hence the test of actual experience given by using the steel made from the pigs, is more satisfactory than could possibly be afforded by the analysis of minute portions of separate pigs.

1. Anderson, the manager and part owner of the Ramshyttan Iron Works, where the G P H iron was made,—Record, pp. 22, 23 (74–77); who had conducted the practical part of the iron manufacture at that furnace,—p. 22 (74),—testified, that an analysis had been made of the iron from that furnace by Bernhard Fernquist, in Orebro, and that he used exclusively Pershyttan ore with only two per cent. of Wiker ore, which did not contain more phosphorus than the ore from Pershyttan, p. 23 (75). He then testified in answer to the 11th interrogatory: "No new analysis was made because no change in the ore was observed," p. 23 (76). This was objected to on the ground that it was not responsive, was a conclusion, and was hearsay. It does not appear that it was hearsay, and therefore is not open to criticism as being a conclusion. If not strictly responsive to the question, the counsel should have moved to strike

it out before the deposition was offered in evidence on the trial.

York Company *vs.* Central Railroad, 3 Wall., 107.

Blackburn *vs.* Crawfords, 3 Wall., 175, 191.

The objections taken to the witness' answers to the 17th, 18th, 19th and 20th interrogatories, were on similar grounds, and are equally untenable. The opinion expressed in all of these that the ores and iron made at the witness's furnace were all of exactly the same quality is the conclusion of a practical man. The counsel for the company maintained on the trial that such a person was the only one competent to express an opinion. Record, pp. 74, 75 (204). While not conceding this, it can hardly be denied that such a person is competent to express an opinion on the subject referred to, and the objections referred to are therefore not well taken.

Spring Co. *vs.* Edgar, 99 U. S., 645.

So far as the objection taken to the witness's testimony that he sent samples of pig iron G P H to Bernhard Fernquist is concerned, p. 23 (77), the answer is obvious. It does not appear that the testimony is hearsay. It is sworn to positively, and if the evidence of the witness as to the uniformity of the quality of the iron made at his furnace be true, it is obvious that an analysis made in 1878 would be evidence of the quality of iron, made in the same furnace from the same ores and by the same process in 1879.

2. An objection was also taken to the witness's statement as to the character of certain ore shown by an analysis made by Adolf Tamm, p. 26 (83). This analysis was subsequently excluded by the Court, p. 26 (83), so that the answer really dropped out of the case.

3. Prof. Fernquist, of Orebro, who analyzed the iron

(G P H), testified to his analysis and to the method upon which it was made. Numerous exceptions were taken to his testimony, pp.30,31, but they all raised the same question, to wit, that it was incompetent to show the character of the iron manufactured at the Pershytte Furnace in 1878. The reasons already stated, it is believed, show conclusively that the evidence thus offered was competent.

The identity of the samples furnished Prof. Fernquist, and analyzed by him was shown by P. Erikson. Record, p. 33, (101)

4. Objections were taken to the answers given by Harold Dillner to the 7th and 8th interrogatories. These answers were objected to, first, on the ground that they contained a conclusion of the witness, and not a statement of facts ; and second, on the ground that they were hearsay. Record, pp. 33, 34 (103, 104). The witness was shown to be qualified to express an opinion, if he gave one—p. 33 (102)—and it does not anywhere appear that the answer to the 8th interrogatory was hearsay. On the contrary, the inference is that the witness spoke from his personal knowledge. The answers to the 9th and 10th, 14th and 18th interrogatories put to Dillner are also objected to ; pp. 34 to 36. They give the result of the experience of a practical engineer employed as technical assistant at the Pershytte Furnace—p. 33 (102)—where the iron in question was manufactured, as to the uniformity of the ores from which the iron is made, and the freedom from injurious matters of the iron thus manufactured. The argument as to the admissibility of this testimony has been sufficiently presented. The objections taken to the witness's answer to the 4th cross-interrogatory, Record, p. 37, and to his answer to the 15th cross-interrogatory, p.38, are equally untenable, for the reasons already stated.

In answer to the 26th cross-interrogatory, the witness stated : "I am not a professional chemist." On this ground, the counsel for the company objected to the

answer given in reference to the analysis of Fernquist. Which particular portion of the deposition was referred to in this objection is not specifically stated, but it is supposed that it refers to the answer to the 18th interrogatory, p. 36, in which the witness says: "concerning his analyses, my own experience is that they are as conscientiously, as exactly—made in full harmony with the progress of science." This is an answer which a professional expert employed to assist in the process of manufacturing, might very properly make in reference to the reliability of the analyses of a professional chemist, as tested by experience. In fact, the reliability of such analyses can be tested in no other way. The chemist applies his theoretical tests. The manufacturer ascertains from experience whether the result of these theoretic tests corresponds with the result of experience. The tests are not made for their own sake, but to indicate to the manufacturer whether a particular article of iron is suitable for making, for example, the finest quality of tools. In the end, nothing but experience can determine this, and the opinion and judgment of each is, therefore, a valuable aid to that of the other. And so Metcalf, a witness called for the Company, testified, p. 99 (271).

The only other exception taken to the admission of any portion of Dillner's testimony is to a portion of his answer to the 29th cross-interrogatory, p. 41: "My opinion is, the 12,000 centners Pershytte pig iron is an article of most excellent quality." This was objected to on the ground that it was hearsay, and opinion; incompetent and not responsive to the cross-interrogatory. As this cross-interrogatory was the usual general cross-interrogatory, it is difficult to sustain the objection that it was irresponsive, provided it was material: even if this objection could ever be taken on the trial, to the answer to an interrogatory put under a commission. So far as the other points suggested are concerned they are without merit. The statement is positive and not hearsay, that the witness was the man under whose super-

vision the iron was made, pp. 33, 34 (102–106). The only possible criticism that could be passed upon the answer was, that it was too general. This objection was not, however, taken. When the evidence of the defendant's witness, Arnberg, is considered, to wit: that the iron becomes more valuable the less amount it contains of phosphorus, p. 80 (219), and Hunt, p. 92 (252), that the actual value of iron and steel for use is largely dependent upon the amount of phosphorus contained in them; it is evident that the language of the witness is to be taken in connection with the previous part of his deposition, and that so taken it amounts to this, that from his knowledge of the ores from which this particular lot of iron was made, and of the process of manufacturing, he was able to state and did state, that the iron in question was as free from phosphorus as any iron that was made.

5. Cassell, the manager of the Svana Iron Works, in which the second lot of iron marked, SBVE and NBBBK, was manufactured, p. 41 (123, 124), gave evidence as to the manner in which this iron was manufactured. His answers to the 7th, 8th, 10th, 16th and 19th interrogatories were objected to on the same grounds as those taken to Dillner's evidence. The answers were admissible, and the objections to their admission were not well taken for the same reasons as those already stated in reference to the Dillner answers.

6. Johansen, who was a manager of the Svana Iron Works, was acquainted with the second lot of pig iron made at those works and sold to the Hoglunds, and by them to the company. His answers to the 12th and 20th interrogatories p. 46, (135, 136), were objected to on the same grounds as those taken to the testimony of Dillner. The objections to the admissibility of this evidence are not well taken for the reasons stated in reference to the Dillner answers.

The answer to the 5th cross-interrogatory, p. 47 (137),

shows that the witness had personal knowledge as to the materials used at his furnace in the manufacture of iron.

7. O. M. Hoglund was examined, and gave evidence as to the shipment of the iron, and the persons from which it was bought. This evidence was given solely for the purpose of identification, p. 47 (139). The answer was objected to as hearsay, and probably the first sentence of it was. But this was not specifically objected to, and it is evident that the third and fourth sentences of this answer were stated on the witness's personal knowledge; hence the objection being to the whole answer, and some parts thereof being proper, the objection was rightly overruled, even though some parts of the answer were incompetent.

Moore *vs.* Bank of the Metropolis, 13 Pet., 302, 310.

In any case the objection was overruled for the present only, and if the company had felt aggrieved by the ruling, its counsel should subsequently have moved to strike it out. The admission of the first sentence, even if that had been specifically objected to, could not have prejudiced the company in any case, because the fact was abundantly proved by other witnesses, and was indeed not in dispute.

Allen *vs.* Blunt, 2 Woodb. & M., 121, 153.

Seventh.

Exceptions to Evidence respecting Analyses.

1. None of the exceptions taken to the admission of the questions put to Prof. Sharples were well taken. He was by profession an analytical chemist, and had

been for nineteen years. He had frequently made analyses of iron to determine phosphorus and other substances, and had analyzed substances other than iron for the determination of phosphorus. He had made an analysis of samples from the different lots of iron mentioned in the contracts in suit. Record, p. 65 (180). A statement of all of the analyses which had been proved at the time he was examined as a witness was made, and he was asked, Q. 72, Record, p. 65 (181):

"In your judgment, to what extent would the result of those several analyses indicate a material variance as to the quality and constituent parts of the bulk of the iron from which the samples were respectively taken; from the following percentages: Silicon, .90; phosphorus, .03; sulphur, a trace?"

The answer to this was not strictly responsive, but it was not objected to on that ground, and it did state facts which were material to the case, to wit., that the specimens taken from any one pig, or even from ten pigs, would not fairly represent a lot of five hundred tons. This particular statement was objected to by the defendants, but when taken in connection with the statement in the context, to wit., that the phosphorus is somewhat unequally distributed in a lot of iron, it was certainly material as bearing upon the reliability of the samples and the accuracy of the inference to be drawn from them. The evidence was plain, that most of the analyses made by the defendant's chemists, were made from borings taken from an exceptionally small pig, and almost all the rest from a cubical block taken from one other pig. Evidence Arnberg, Record, pp. 80, 81 (220-222), p. 82 (223). In reference to this "exceptionally small pig," Arnberg, the defendant's witness, admitted that the smallness of its size must have been caused by some obstruction in the flow of the iron in the mould, which prevented the iron from filling the mould—Record, p. 82 (224)—and which might naturally have caused an admixture of some impurities in the pig.

On the other hand, the samples analyzed by Lundberg's chemists were drawn from a much greater variety of pigs. One set of them was taken from the pigs selected by the Custom House officers in New York, as samples of the lot, another from a set of pigs sent to Lundberg by the company. Record, p. 57, 58 (L 63, 164, 165). Three of these were produced in Court by the plaintiff. Record, p. 52 (151), p. 58 (165). Another series of the Lundberg analyses was made from samples taken in the following manner: "Then Dr. Wendell and I went out in the mill and picked out two pigs of each brand and had them drilled and took the borings from two of each brand and mixed them up, and I brought three boxes of those borings to New York to Dr. Chandler. P. 59, (166) Testimony Lundberg.

The case having been submitted to the jury principally upon a discussion of the value and reliability of these different samples, it was obviously extremely important to introduce evidence which would tend to inform the jury, as to the extent to which a sample from one pig would indicate the character of the bulk of the iron.

"It is not an objection, as is assumed, that he was asked a question involving the point to be decided by the jury. As an expert he could properly aid the jury by such evidence, although it would not be competent to be given by an ordinary witness."

Transportation Line *vs.* Hope, 95 U. S., 297.

The other objections taken to the questions put to Prof. Sharples are equally untenable. The main ground of objection would appear to be that the method according to which each analysis was made was not stated to the Professor. But the object of the inquiries put to Prof. Sharples was to show that assuming the different methods used by the different chemists to be equally reliable, and each chemist to be equally accurate, still the variations in the results were not so great as to

prove a material variation in the bulk of the iron from the analyses referred to in the contracts. This certainly is a point upon which no one but an expert analyst would be qualified to pass.

The questions put to Sharples were distinctly adapted to elicit from him an opinion on this important subject, and the fact that they did not embrace a discussion of the various methods used by the different chemists is not important. No doubt there was room for argument as to which was the best method, and it does in fact appear from the case that considerably testimony on this subject was presented to the jury by witnesses who were orally examined. Elliot, Record p. 50 (147); Mackintosh, p. 51 (150); Prof. Chandler, p. 71 (195).

But none of this testimony had been given when Prof. Sharples' deposition was taken, and the only point to which his testimony on this subject was directed, was that just stated. It is a material point, and the fact that his examination does not cover the whole case is no ground for objection, if it covered, and was applicable to, a material portion of it.

In Schuchardt *vs.* Allens, 1 Wall. 359, 368, the Court, referring to an answer to a question, say :

"It was not necessary that it should be sufficient for that purpose. If such were its tendency, if it were a link in the chain of proof, it was within the sphere of competency, while its effect was a question for the jury."

2. The question put to Prof. Chandler covered a larger field. When he was examined, there was testimony in the case as to the accuracy of the different methods employed by the different chemists who had made analyses, and it was therefore competent and proper to put to him a question embodying and calling for an opinion from him as to the relative accuracy of the several methods. The first question put to him is at pp. 74, 75. The Court held that the question, as then

put, assumed facts which did not appear. Thereupon, the witness was examined as to his competency to express an opinion. This examination was directed to test the experience of the witness in the actual manufacture of iron as distinguished from experience acquired by him theoretically and professionally. Pp. 75 to 77. The witness testified that he had been employed as consulting chemist by the Boonton Iron Works; that he visited their works, watched the operations, sampled their products, analyzed them, or had them analyzed under his supervision, and consulted with the proprietor in regard to the different ores which would be most likely to produce the best products; had watched the running of the furnaces, and taken samples of slag, pig iron and fuel, with the view of improving the working of the furnaces, and getting a standard for whatever they wanted. (Record, pp. 75, 76, fol. 205–208.)

The witness was then shown the table of the various analyses which faces p. 78, or, at least, that portion of it which is above the three parallel horizontal lines, and was asked this question:

"To what extent, in your judgment, do the results of the analyses contained in the table you hold in your hand, indicate a variation in the quality of the bulk of five hundred tons of the G. P. H. iron, and three hundred tons of the two other brands, from that shown by the guaranteed analyses which are also stated in the table—assuming that the table shown you correctly states the results, and that the analyses were made up by competent chemists?"

This question was a proper one to be put to an expert, and the witness was qualified to answer it. The facts testified to by him were those already stated, and showed clearly that he was not only familiar with the manufacture of iron theoretically, but practically. The question put to him was to obtain his judgment as to whether the variations in the analyses conclusively showed that the bulk was not in accordance with the analyses referred to in the contracts, and

to what extent they indicated or tended to indicate the variance. This certainly was a point on which no jury or judge would be competent to pass without the opinion of experts. It was, therefore, eminently proper to call them. They were in fact called on the trial on both sides, and it is difficult to see how it would be possible to try a case of this sort without the aid of their testimony.

The objection stated in the record was that the question was rather for a practical manufacturer, p. 75 (204). No doubt, it would be competent for a practical manufacturer to express an opinion on this subject. Such persons were actually called on behalf of Lundberg, and also on behalf of the Company. But it does not at all follow that they would be the only persons qualified to express such an opinion. Some of the most useful and important discoveries in the arts have been made by persons who were not practical manufacturers. Whitney, the inventor of the cotton gin, was not a practical manufacturer. Morse was not a practical electrician. Gilchrist and Thomas were not practical manufacturers of iron. The list might be extended indefinitely. To say that no person is qualified to express an opinion as to the inference to be drawn from the variation in analyses but a practical manufacturer, is as unwise as it would be to say that no person is qualified to express an opinion as to the structure of a house but a mason.

3. The question put to Wuth, an expert called by the company, p. 118 (316, 317), was in the same form as one put to Prof. Chandler by the counsel for Lundberg, p. 74 (202, 203). This question was excluded by the Court, upon an objection taken by the counsel for the company; but the Court allowed a question to be put to Wuth in the same form as that in which it was allowed to be put to Chandler, p. 118 (318); p. 75 (204).

(*a.*) The difference in the form was immaterial. This

Court will not reverse because of an immaterial difference in the form of expression, between the counsel and the Court.

(*b.*) The counsel for the company will not be heard to say that a ruling was erroneous, which was made at his own request, and not excepted to by him, and which the Court afterwards followed when he was examining a witness.

Eighth.

Exceptions to Charge.

The exceptions taken to the charge as given, and to the refusal to charge are substantially covered by the points already made. We will only remind the Court of the uniform rule that a judge on the trial is not required to adopt the precise language of the defendant's requests. If he states the rule of law applicable to the decision of the case correctly to the jury, a new trial will not be granted, although requests in themselves proper were refused.

Railway Co. *vs.* McCarthy, 96 U. S., 258.
Continental Improvement Co. *vs.* Stead, 95 U. S., 161.
Indianapolis, etc., R. R. Co. *vs.* Horst, 93 U. S. 291.

Or even when an isolated sentence is erroneous, if, as a whole, the case was properly submitted.

Evanston *vs.* Gunn, 99 U. S., 660.

For example, the Court was asked to charge, p. 126, (339) that the defendant is not bound to receive any of the iron under either contract; that it is not bound to receive the entire amount covered by either contract,

unless it all answered in fact to the description or quality stated in the contract. The Court had already so charged, p. 124 (333).

The next request immediately following this was correctly refused for the same reason, and also because it involved a statement that there was no material variation in the different pigs of the same cast, and the evidence as has been shown, was directly the reverse.

The third and fourth exceptions to the charge have been already considered. The fifth exception, p. 113, is cured by the verdict, for it appears from the sentence immediately following that the plaintiff recovered nothing for commissions. The charge in reference to this therefore was immaterial. No special exception was taken to the charge as to freight, but the objection on this subject is probably raised by the motion to direct a verdict, and will next be considered, though neither it nor the exception considered under the Tenth Point are assigned for error in the brief for the Company.

Ninth.

Recovery for the Freight.

August 20, 1880, p. 105 (286)—Selden Marvin, the Secretary and Treasurer of the Company, wrote to Lundberg, "The iron is here subject to your order and to such charges as we may have been subjected to. What shall we do with it?"

February 3, 1881, p. 105, Marvin agrees to ship part of the iron as ordered and to render his bill for charges. February 9, 1881, p. 106, he says he will send the bill for freight when the iron is removed. February 14, 1881, p. 22, (73) he writes: "Our charges for freight and cartage on the iron as it now lies amount to 88 cents per ton.

March 8, 1881, he sends the bill for charges and gives

the items on the whole amount in the letter of August 9, 1881, p. 106, (290). In this same letter, the Company makes the claim that the full amount of the iron had not been delivered, but Lundberg insisting August 12, 1881,—p. 112 (302) that the Company had used the iron, and that the weights given by the Custom house weigher must control, the Company conceded the point, p. 101, (290). The final statement of the difference between the contract price of the iron which the defendant failed to return or deliver and the amount of the freight, appears on p. 113. It is obvious from the statement in the letter of August 20, that the iron was held subject to the charges to which the Company had been subjected, and that the Company refused to deliver the iron unless Lundberg paid or agreed to pay the freight from New York to Troy, which the Company had actually paid. Indeed, the Company, in case there was a breach of warranty, would have had the right to hold the iron for this amount.

It follows that the money thus paid by Lundberg was paid under duress of goods. That is to say, the company refused to accept and pay for them, and he had his option whether to leave them and sue for the whole price or to take and resell them and sue for the difference. He elected the latter course, and had therefore a right to take the goods. The company refused to deliver them unless Lundberg would refund the freight it had paid. To get the goods he was obliged to pay this, and if the Company's refusal was unlawful he can recover it back.

Tenth.

Accord and Satisfaction.

The third ground on which the Company moved to direct a verdict is stated at p. 121.

"That the correspondence and acts of the parties while the resales were being made, and the adjustment of their claims and counter-claims against each other, together with the payment of $306.45 by the defendant to the plaintiff, and the receipt by the plaintiff therefor on August 5, 1881, amounted to a rescinding of the contracts and the full settlement of all the claims arising under them—that is to say, as a matter of law."

Whatever there was in this subject appears in the correspondence. There is certainly nothing in the letters which shows that the adjustment of the account in reference to this charge for freight, and to the amount of iron used by the Company was intended as an accord and satisfaction of Lundberg's entire claim. On the contrary we find him insisting on his claim that the iron was equal to the sample. See the letter of July 3, 1880, p. 108, in which he encloses the analysis he has made, and demands payment of the entire amount of the contract price, and also the letter of July 29, 1871, p. 107.

This claim is renewed September 2, 1880, p. 110, and was also renewed in the conversation with Marvin, testified to by Lundberg, pp. 59, 63:

Q. Well, you were trying to induce him to take the iron under the contract?

A. I tried to show him that we were right.

Mr. Marvin's letter of August 15, 1881, p. 106 (290), sends a check in payment "for our relations to this lot of iron," that is the lot which by mistake the company had used, referred to in his previous letter of August 9, 1881, p. 106 (289). The check thus sent is exactly the amount mentioned in Lundberg's letter of August 12, 1881, p. 112 (302), as being the difference between the price of this lot of iron and the freight.